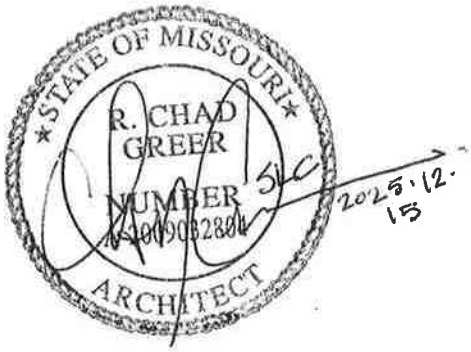
Project Manual and
Specifications for

An Interior Renovation For:

MSSU – MAYES HALL
Student Life Center

MISSOURI SOUTHERN STATE UNIVERSITY

100% Construction Documents
DECEMBER 15, 2025



CGA
architecture
planning
design

MO CA #000531

Corner Greer & Associates, Inc.
716 S. Main Street Joplin, MO 64801 o.417.206.3134 www.cornergreer.com

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SECTION 001100 – ADVERTISEMENT FOR BIDS

Sealed proposals will be received by MSSU, hereinafter called the "Owner", until 2:00 p.m. on Thursday, January 22nd, 2026 at which time said bids will be collected and opened publicly at MSSU, Billingsly Student Center, Room 356, for furnishing all labor and materials for the interior renovation of Mayes Hall – Student Life Center (Lower Level).

Bids received more than ninety-six (96) hours, excluding Saturdays, Sundays and holidays, before the time set for opening of bids, as well as bids received after the time set for opening of bids, will not be considered and will be returned unopened.

A **mandatory** pre-bid meeting will be held at 2:00 p.m. on Thursday, January 8th, 2026. Bidders shall meet at the project location. See below reference map for location.

Plans and specifications may be obtained online from a link furnished by the MSSU (request: Jennings-K@mssu.edu). Successful bidder shall be responsible for purchasing and/or furnishing all plans, specifications and required documents for construction of the project.

A character and amount of security to be furnished by such bidder is stated below:

A cashier's check, a certified check or a surety bond in the amount of five percent (5%) of the bid shall accompany the sealed proposal of each bidder.

The Owner reserves the right to reject any or all proposals or to waive any informality or technicality in any proposal.

Requests for Information & Substitution Requests shall be received prior to Thursday, January 15th, 2026.

Mandatory Pre-Bid Meeting, Reference Map for location – Below.

Contractors to park in available parking and walk to project location. E Julie Hughes Drive will not provide access to parking or parking areas. Parking south of Lion Village is the most available, accessed from International Avenue.

REFERENCE MAP:

SECTION 002113 - INSTRUCTIONS TO BIDDERS

1. ADDENDA AND INTERPRETATIONS.

1.1 No interpretation of the meaning of the Drawings, Specifications or other documents will be made orally prior to execution of the Contract. No interpretation of the meaning of anything pertaining to a Change Order will be made orally prior to execution of the Change Order.

1.2 Every request for interpretation shall be addressed to the Architect. Interpretations and supplemental instructions will be in the form of written addenda to the Drawings and Specifications and will be delivered or mailed to the Contractor. Addenda so issued shall become part of the contract documents.

2. RECEIPT AND OPENING OF BIDS.

2.1 Bids will be received at a time and date to be announced by the Owner.

2.2 The Owner may consider informal any bid not prepared and submitted in accordance with provisions hereof and may waive any informalities and reject any and all bids. Bids may be withdrawn prior to the scheduled time for opening of bids or authorized postponement thereof. Any bid received after time and date specified will not be considered and will be returned unopened. No Bidder may withdraw a bid within 30 days after actual date of the opening thereof.

3. PREPARATION OF BID.

3.1 Bids must be submitted on forms provided and must be submitted in a sealed envelope bearing on the outside the name of the Bidder and the name of the project for which the bid is submitted. If forwarded by mail, the envelope containing the bid must be enclosed in another envelope addressed to the Owner. All blank spaces in the form shall be fully filled; numbers shall be stated both in writing and in figures. Written bid amounts shall govern. The signature shall be in long hand; and the completed form shall be without interlineations, alterations or erasures.

3.2 Proposals shall not contain any recapitulation of work to be done. No oral, telegraphic, or telephonic proposals or modifications will be considered.

4. LAWS AND REGULATIONS.

4.1 The Contractor's attention is directed to the fact that all applicable ADA (Handicap) CODES, State laws, municipal ordinances and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout and they will be deemed to be included in the contract the same as though herein written out in full.

5. OBLIGATION OF BIDDER.

5.1 At the time of opening of bids each Bidder will be presumed to have inspected the site and means of access and transportation required and to have read and to be thoroughly familiar with the Drawings, Specifications, bidding documents and contract documents, including all Addenda. The failure of any Bidder to examine any form, instrument or document or to inform himself of conditions relating to the construction of the project shall in no way relieve any Bidder from any obligation in respect to his bid.

5.2 Should a bidder find discrepancies in, or omissions from the drawings, or documents, or should he be in doubt as to their meaning, he should at once notify the Architect, who will send a written instruction to all bidders. Neither the Owner nor Architect will be responsible for any oral instructions.

6. PERFORMANCE, STATUTORY AND DEFECT BOND: Successful bidder shall be required to furnish surety bonds in the principal sum of the contract, payable to the Owner and executed by a Surety Company authorized to do business in the State of Missouri, as surety; said bonds shall be subject to approval by the Owner.

7. IDENTIFICATION NUMBERS: All contractors, prime and general, sub-contractors, independent contractors and any person engaged in contract labor must possess current identification numbers issued by the Missouri Department of Revenue, Missouri Employment Security Commission, Internal Revenue Service and Social Security Administration.

8. BIDDER'S QUALIFICATIONS:

8.1 This project is to be bid by qualified Contractors familiar with the type of construction required by this project. The General Contractor shall submit with his proposal for approval a list of all Subcontractors proposed for performing work on this project.

8.2 The OWNER may make such investigations as he deems necessary to determine the ability of the BIDDER to perform the WORK, and the BIDDER shall furnish to the OWNER all such information and data for this purpose as the OWNER may request. The OWNER reserves the right to reject any BID if the evidence submitted by, or investigation of, such BIDDER fails to satisfy the OWNER that such BIDDER is properly qualified to carry out the obligations of the Agreement and to complete the WORK contemplated therein. Low bidder, if requested, must submit a financial statement, experience record, and an equipment schedule. Financial statement must reflect true financial condition of bidder within three months prior to date of bid opening.

9. WITHDRAWAL OF BIDS. No bids may be withdrawn after the scheduled closing time for receipt of bids for at least thirty (30) days.

10. CONTRACT EXECUTION. Upon award of contract the Contractor shall be required to execute the contract and the surety bonds within ten (10) days thereafter. The competency and responsibility of bidders and of their proposed sub-contractors will be considered in making the award. The Owner does not obligate himself to accept the lowest or any other bid.

11. POWER OF ATTORNEY: Attorneys-in-fact who sign bonds must file with each bond a certified and effectively dated copy of their power of attorney.

12. FORM OF CONTRACT: The Contract will be per 005200, or otherwise as directed by Owner (MSSU).

13. COMMENCEMENT AND TIME OF COMPLETION OF CONSTRUCTION: Contractor shall be mobilized and "on site" within twenty (20) calendar days of "Notice To Proceed". The time of completion of construction of the Project shall be as specified by the Proposal and Contract Agreement. The Bidder may not take exception to the time allowed to complete the work. Bids shall reflect the Bidder's price for providing all necessary labor, material, equipment, and supervision to fully complete the work from the date specified in the Notice to Proceed.

14. SALES TAX: It is the policy of the Owner to take advantage of any savings from their "Tax Exempt" Status. To this end the Contractor agrees to process proper and adequate paperwork and documentation under the governing laws of the State of Missouri. The Owner will furnish the successful bidder an appropriate exemption certificate. The Contractor shall not include such TAXES in his "Proposal."

15. SCOPE OF PROJECT: The project consists of the construction of the Interior Renovation at Mayes Hall (Student Life Center), Lower Level at MSSU.

16. Each proposal on bid form includes a BASE BID AMOUNT, with any alternates and unit costs which represents a summary of all costs.

17. PLANS & SPECIFICATIONS:

17.1 Plans and specifications may be obtained online from a link furnished by the Owner (MSSU). Successful bidder shall be responsible for purchasing and/or furnishing all plans, specifications and required documents for construction of the project.

18. **ANTI-DISCRIMINATION AGAINST ISRAEL ACT:** All contractors, subcontractors, manufacturers and material suppliers shall agree to comply with Missouri's Discrimination Against Israel Statute. Accordingly, all contractors, subcontractors, manufacturers and material suppliers will not engage, during the terms of this Agreement, in a boycott of Israeli goods or services, either directly or indirectly. Failure to comply will result in forfeiture of contract.

END OF SECTION 002113

BID FORM

Date_____

Time:_____

Place_____

PROPOSAL OF

_____
(hereinafter called "Bidder")

_____and
(insert Corporation, Partnership, or Individual, as applicable)

existing under the laws of the State of _____, doing business as

_____,

TO: **Missouri Southern State University**
(hereinafter called "Owner")

The Bidder, in compliance with your invitation for bids for the construction of:

MSSU – Mayes Hall – Interior Renovation
Student Life Center
3950 E. Newman Road
Joplin, MO 64801

having carefully examined the plans and specifications with related documents and the site of the proposed work, and being familiar with the premises and the condition affecting the construction of the proposed project including the availability of materials and labor, hereby proposes to furnish all materials, supplies, and to construct the project in accordance with the Contract Documents, within the time set forth therein, and at the prices stated below. The prices are to cover all expenses incurred in performing the work required under the Contract Documents, of which this proposal is a part.

Bidder hereby agrees to commence Work under this Contract on or before a date to be specified in a written "Notice to Proceed" by the Owner and to fully complete the project within _____ calendar days thereafter as stipulated in the specifications.

Bidder acknowledges receipt of the following addendum: _____

BASE PROPOSAL: Bidder agrees to perform all of the work described in the specifications and as shown on the plans, for the following prices:

TOTAL BASE BID AMOUNT:

_____DOLLARS ($_____)
(Amounts are to be shown in both words and figures. In case of discrepancy, the amounts shown in words will govern.)

ALTERNATE 1: ADD for the total costs associated with work as outlined in the PLANS for Laundry Room 112:

_____DOLLARS ($_____)
(Amounts are to be shown in both words and figures. In case of discrepancy, the amounts shown in words will govern.)

ALTERNATE 2: ADD for the total costs associated with the new sidewalk as shown on A101:

_____DOLLARS ($_____)
(Amounts are to be shown in both words and figures. In case of discrepancy, the amounts shown in words will govern.)

Bidder understands and acknowledges that the bid items shown in this Proposal represent a summary of all major components of construction required, and is set forth to facilitate the comparison of bids, and to provide a basis for any future negotiations that may be necessary. The bid price for each item shall include the cost of all adjacent or related items which are shown on the plans, or called for in the specifications, or otherwise necessary to provide a complete and functioning system.

Bidder understands that the Owner reserves the right to reject any or all bids and to waive any irregularities in the bidding.

The Bidder agrees that the Owner may reduce the quantities of work required, in order to bring the total contract costs within the available funds.

The Bidder agrees that his bid shall be good and may not be withdrawn for period of thirty (30) calendar days after the scheduled closing time for receiving bids.

The bid guaranty furnished herewith by (Certified Check) (Cashier's Check) or (Bid Bond) in the amount of:

_____DOLLARS($_____)
which is equal to five percent (5%) of the largest total of lump sum bid price, which I understand is to become the property of the Owner in the event the Contract and bond are not executed within the time above set forth, as liquidated damages, for the delay and additional expense to the Owner caused thereby.

The Bidder agrees, if awarded the Contract, to complete the Project within the number of days which is set forth in this Proposal. The Bidder further agrees to commence construction no later than 20 days from date of receiving Notice to Proceed.

Upon receipt of written notice of the acceptance of this bid, Bidder shall execute the formal contract attached within ten (10) days and deliver a surety bond, or bonds, as required and set forth in the GENERAL CONDITIONS.

ATTEST Respectfully submitted,

By_____ _____
Bidder

Title_____ By_____
Title

(Seal)
(If Bid by a Corporation)

_____
Street Address

_____
City,State

SUBCONTRACTOR LIST

The General Contractor shall provide a list of proposed subcontractors included in their Bid. Failure to complete this form may result in the Bid being considered as "incomplete" & exempt from consideration.

Mechanical _____

Electrical_____

Plumbing_____

Drywall_____

Millwork_____

Flooring_____

Painting_____

NONCOLLUSION AFFIDAVIT

The following affidavits are to accompany the bid:

STATE OF _____)
) ss..
COUNTY OF_____)

_____, of lawful age, being first duly sworn, on oath says that (s)he is the agency authorized by the Bidder to submit the attached bid. Affiant further states that the bidder has not been a party to any collusion among bidders in restraint of freedom of competition by agreement to bid at a fixed price or to refrain from bidding; or any other terms of said prospective contract; or in any discussions between bidders and any state official concerning exchange of money or other things of value for special consideration in the letting of a contract.

_____

Subscribed and sworn to before me this _____ day of _____, 202__

_____
Notary Public

My Commission Expires:

_____

BUSINESS RELATIONSHIPS AFFIDAVIT

STATE OF _____)
) ss..
COUNTY OF_____)

_____, of lawful age, being first duly sworn, on oath says that (s)he is the agent authorized by the Bidder to submit the attached bid. Affiant further states that the nature of any partnership, joint venture, or other business relationship presently in effect or which existed within one (1) year prior to the date of this statement with the architect, engineer, or other party to the project is as follows:

_____

_____

_____

Affiant further states that any such business relationship presently in effect or which existed within one (1) year prior to the date of this statement between any officer or director of the bidding company and any officer or director of the architectural or engineering firm or other party to the project is as follows:

_____

_____

_____

Affiant further states that the names of all persons having any such business relationships and the positions they hold with their respective companies or firms are as follows:

_____

_____

_____

(If none of the business relationships hereinabove mentioned exist, affiant should so state)

_____

Subscribed and sworn to before me this _____ day of _____, 202__

_____
Notary Public

My Commission Expires:

_____

NON-KICKBACK AFFIDAVIT

STATE OF _____)
) ss..
COUNTY OF_____)

The undersigned person, of lawful age, being first duly sworn, on oath says that the attached invoice is true and correct and that (s)he is authorized to submit the invoice pursuant to a contract or purchase order. Affiant further states that the work, services, or materials as shown by this invoice have been completed or supplied in accordance with the plans, specifications, orders, requests or contract furnished or executed by the affiant. Affiant further states that (s)he has made no payment directly or indirectly to any elected official, officer or employee of the county, municipality, or school district of money or any other thing of value to obtain payment of the invoice or procure the contract or purchase order pursuant to which an invoice is submitted.

_____
Contractor, Supplier

Subscribed and sworn to before me this _____ day of _____, 202__

_____
Notary Public

My Commission Expires:

_____

MISSOURI SOUTHERN STATE UNIVERSITY

Contract Requirements:

Your attention is called to the following requirements and the State of Missouri – Division of Purchasing and Materials Management, Terms and Conditions – Request for Proposal:

Federal Work Authorization Program: RSMo. 285.525 and 285.530 require business entities to enroll and participate in a federal work authorization program in order to be eligible to receive an award by the state or any political subdivision of any contract in excess of $5,000. Bidders must submit with their bid an Affidavit of Enrollment in Federal Work Authorization Program and Compliance with Executive Order #07-13.

Revenue. No contract will be awarded by the University unless the successful bidder certifies that he/she has complied with all applicable provisions of Section 285.230-234.

Sales Tax Exempt. The University is exempt from payment of State of Missouri and City sales taxes on all materials used on behalf of the University for this project.

Preferences: Please note the following preferences: Buy American (RSMo 34.353), Buy Missouri (RSMo 34.070), Reciprocity (34.076 RSMo), and Missouri Service Disabled Veteran Business (34.375 RSMo).

University Right to Reject: The University reserves the right to reject any or all proposals, to waive irregularities, and to award the work to any bidder. All bidders agree that such rejection shall be without liability on the part of the University or its employees for any damage or claim brought by any bidder because of such rejection, nor shall any bidder seek any recourse of any kind because of such rejection. Each bidder is solely responsible for all costs and expenses in preparing its bid or participating in the bidding process, in submitting any information to the University and in responding to any request for additional information or participating in interviews. The submission of a proposal in response to this constitutes an agreement of the bidder to these conditions.

No bid shall be considered binding upon the University until the written contract has been properly executed and the following documentation/evidence has been furnished by bidder: (i) a satisfactory performance and payment bond, (ii) proof of insurance coverage of the type and limits required by the contract, (iii) appropriate affirmative action plan submitted or, if applicable, the Affidavit for Waiver of Affirmative Action, and (iv) if applicable, proof that the bidder has complied with RSMo Section 285.230-234. Failure to execute and return the contract and associated documents within the prescribed period of time shall be treated, at the option of the University, as a breach of bidder's obligation and the University shall be under no obligation to bidder.

Kristy Jennings
Finance Accountant

Authorized to Do Business: If Contractor is a corporation or limited liability company organized in the State of Missouri, Contractor represents that it is in Good Standing with the Missouri Secretary of State. If Contractor is a corporation or limited liability company organized in a state other than Missouri, Contractor represents that it is authorized to do business in the State of Missouri.

SECTION 005200 – OWNER CONTRACTOR AGREEEMENT

If notified of the acceptance of Bid within 30 calendar days of the time set for opening of bids, the Contractor agrees to execute the A.I.A. Document A101 – 2017, Standard Agreement between Owner and Contractor, within 10 calendar days of the receipt of such notification and in accordance with the Bid and the Contract Documents.

A sample document may be reviewed at the Architect's Office for reference only. The final wording and dates will be completed by the Architect prior to execution.

END OF DOCUMENT 00 52 00

PERFORMANCE BOND

KNOW ALL PERSONS BY THESE PRESENT:

That_____,

As Principal, and _____,
a corporation organized under the law of the State of Missouri, Surety, are held and firmly bound unto _____in the penal sum of _____
(State or Other Entity)

dollars ($_____) in lawful money of the United States of America, for the payment of which, well and truly to be made, we bind ourselves and each of us, our heirs, executors, administrators, trustees, successors, jointly and severally, firmly by these presents.

The condition of this obligation is such that:

WHEREAS, said Principal entered into a written Contract with _____,
(State or Other Entity)
dated _____, 202__, for_____

_____

---

all in compliance with the plans and specifications, therefore, made a part of said Contract and on file in the office of _____
(Name and address of Agency)

NOW, THEREFORE, if said Principal shall, in all particulars, well, truly, faithfully perform and abide by said Contract and each and every covenant, condition, and part thereof and shall fulfill all obligations resting upon said Principal by the terms of said Contract and said specifications; and if said Principal shall protect and save harmless said _____ from any
(State or Other entity)
pecuniary loss resulting from the breach of any of the items, covenants and conditions of said Contract resting upon said Principal, then this obligation shall be null and void, otherwise to be and remain in full force and effect.

It is further expressly agreed and understood by the parties hereto that no changes or alterations in said Contract and no deviations from the plan or mode of procedure herein fixed shall have the effect of releasing the Sureties, or any of them, from the obligations of this Bond.
IN WITNESS WHEREOF, the said Principal has caused these presents to be executed in its name and its corporate seal to be hereunto affixed by its duly authorized officers, and the said Surety has caused these presents to be executed in its name and its corporate seal to be hereunto affixed by its attorney - in - fact, duly authorized so to do, the day and year set forth below.

DATED this_____day of_____, 202__.

PRINCIPAL:

_____

By_____

ATTEST:

_____

SURETY:

_____

By_____
Attorney-in-Fact

STATUTORY BOND

KNOW ALL MEN BY THESE PRESENT:

That _____, as Principal,

and _____, a corporation organized

under the laws of the State of _____ and authorized to transact business in the

State of Missouri, as Surety, are held and firmly bound unto _____ in
(State or Other Entity)

the penal sum of _____ dollars ($_____) in lawful money of the United States of America, for the payment of which, well and truly to be made, we bind ourselves and each of us, our heirs, executors, administrators, trustees, successors, jointly and severally, firmly by these presents.

The condition of this obligation is such that:

WHEREAS, said Principal entered into a written Contract with _____,
(State or Other Entity)
dated _____, 202__, for _____

_____

---

all in compliance with the plans and specifications, therefore, made a part of said Contract and on file in the office of _____
(Name and address of Agency)

NOW, THEREFORE, if said Principal shall fail or neglect to pay all indebtedness incurred by said Principal or subcontractors of said Principal who perform work in the performance of such contract, for labor and materials and repairs to and parts for equipment used and consumed in the performance of said contract after the same becomes due and payable, the person, firm, or corporation entitled thereto may sue and recover on this bond, the amount so due and unpaid.

It is further expressly agreed and understood by the parties hereto that no changes or alterations in said Contract and no deviations from the plan or mode of procedure herein fixed shall have the effect of releasing the Sureties, or any of them, from the obligations of this Bond.

IN WITNESS WHEREOF, the said Principal has caused these presents to be executed in its name and its corporate seal to be hereunto affixed by its duly authorized officers, and the said Surety has caused these presents to be executed in its name and its corporate seal to be hereunto affixed by its attorney - in - fact, duly authorized so to do, the day and year set forth below.

DATED this _____ day of _____, 202__.

PRINCIPAL:

_____

By _____

ATTEST:

_____

SURETY:

_____

By _____
Attorney-in-Fact

DEFECT BOND

KNOW ALL MEN BY THESE PRESENT:

That _____, as Principal, and

_____, a corporation organized under the laws of

the State of _____ and authorized to transact business in the State of Missouri, as Surety,

are held and firmly bound unto _____ in the
(State or Other Entity)
penal sum of _____ dollars ($_____)
in lawful money of the United States of America, said sum being equal to One Hundred Percent (100%) of the contract price, for the payment of which, well and truly to be made, we bind ourselves and each of us, our heirs, executors, administrators, trustees, successors, and assigns, jointly and severally, firmly by these presents.
The condition of this obligation is such that:

WHEREAS, said Principal entered into a written Contract with _____,
(State or Other Entity)
dated _____, 202__, for _____

_____

all in compliance with the plans and specifications, therefore, made a part of said Contract and on file in the office of _____
(Name and address of Agency)

NOW, THEREFORE, if said Principal shall pay or cause to be paid to _____
(State or Other Entity)
all damage, loss, and expense which may result by reason of defective materials and/or workmanship in connection with said work, occurring within a period of one (1) year from and after the acceptance of said

project by _____;
(State or Other Entity)
then this obligation shall be null and void, otherwise to be and remain in full force and effect.

It is further expressly agreed and understood by the parties hereto that no changes or alterations in said Contract and no deviations from the plan or mode of procedure herein fixed shall have the effect of releasing the Sureties, or any of them, from the obligations of this Bond.
IN WITNESS WHEREOF, the said Principal has caused these presents to be executed in its name and its corporate seal to be hereunto affixed by its duly authorized officers, and the said Surety has caused these presents to be executed in its name and its corporate seal to be hereunto affixed by its attorney - in - fact, duly authorized so to do, the day and year set forth below.

DATED this _____ day of _____, 202__.

PRINCIPAL:

_____

By _____

ATTEST:

_____

SURETY:

_____

By _____
Attorney-in-Fact

CONDITIONAL RELEASE AND WAIVER OF LIEN
(PERFORMANCE REVIEW)

Upon receipt and sufficiency of a check from the Missouri Southern State University (MSSU), 3950 E. Newman Road, Joplin MO 64801 consideration of payment being received, Contractor hereby waives, releases, remises, relinquishes and forever discharges MSSU from any and all obligations and liabilities arising out of or related to said materials and the work included there under,

_____

_____

_____

The undersigned Contractor hereby warrants that all material suppliers, sub-contractors, and/or laborers have been paid or will be paid from these funds and that all applicable Federal, State and/or local taxes have been paid or will be paid from these funds. Further, the undersigned hereby indemnifies and holds the property owner harmless of any claim contrary to this warranty.

Contractor Name: _____

Contractor Address: _____

_____

Date: _____ Signed By: _____
(Name and Title)

Subscribed and sworn to before me this _____ day of _____, 202__.

_____
NOTARY PUBLIC

Notary Seal (Must include Number
And Expiration Date)

Return form to: Missouri Southern State University
3950 E. Newman Road
Joplin, MO 64801

SALES TAX AGENCY AGREEMENT

This is an Agency Agreement made and entered into as of the_____day of _____, 202__, between_____ _____ of _____COUNTY, MISSOURI, a political subdivision of the State of Missouri (hereinafter referred to as "Owner"), and_____, (hereinafter referred to as "Contractor").

RECITALS:

1. Owner has solicited bids for the interior renovation of the Lower Level at Mayes Hall (Student Life Center) for Missouri Southern State University (the "Project") in Jasper County, Missouri; and such facilities as are necessary and appropriate for the operation thereof; which Project, on or before completion shall be owned by the Owner.

2. Contractor has been awarded the contract for the construction of the Project.

3. Owner desires to purchase all materials, supplies and equipment for the Project in its own name and to take immediate title to all materials, supplies and equipment, and to have Contractor, as general contractor for the Project, perform portions of such purchasing duties.

NOW THEREFORE, in consideration of the premises and in order to constitute and appoint Contractor as agent of Owner for the purchase of equipment and materials for the Project, IT IS AGREED AS FOLLOWS:

1. Owner, as Principal, hereby constitutes and appoints Contractor as Owner's agent, for it and in its name, to acquire materials and equipment for use in constructing the Project.

2. Title to all materials and equipment purchased by Contractor as agent for Owner will pass directly from the seller thereof to Owner.

3. Contractor acknowledges that it is an agent for Owner and agrees to act as agent for Owner in connection with the acquisition of materials and equipment for the Project in the manner above described.

4. The relationship of principal and agent created by this Agreement shall continue until terminated by either party by notice in writing to the other. The parties hereto agree that all sellers or vendors of materials and equipment for the Project shall be entitled to rely upon the existence of the Agreement until they have received written notice of its revocation.

5. Contractor agrees that it will not purchase any material or equipment pursuant to this Agreement except that authorized and intended for inclusion in the Project.

6. In executing purchase orders for equipment and materials for the Project, Contractor shall include in each purchase order a statement, to be approved as to form by Owner, that Contractor is acting as Owner's agent, individually and without power of redesignation, for the purchase of the equipment and materials covered by the purchase order.

7. All equipment and materials purchased by Contractor under this Agreement shall be delivered to owner at the Project job-site.

8. Only equipment and materials to be incorporated in the Project shall be purchased by Contractor as Owner's agent under this Agreement and no equipment and materials will be purchased except the items required by the plans and specifications for the Project. Contractor will not purchase, as agent hereunder, any equipment or materials to be used only incidentally in connection with the Project. Nothing contained herein shall alter the obligation and responsibility of Contractor under the contract between Owner and Contractor for the construction of the Project.

9. All reimbursement by Owner to Contractor for materials and equipment purchased by Contractor as Owner's agent hereunder shall be deemed to be a part payment on the Project contract price.

10. Contractor shall not be entitled to any compensation for its services as Owner's agent hereunder.

IN WITNESS WHEREOF, the parties have executed this Agency Agreement as of the date first above written.

_____

ATTEST: OF_____COUNTY, MISSOURI

_____ By_____
Clerk

(SEAL)

ATTEST: _____
Contractor

_____ By_____
Secretary

SECTION 007200 - GENERAL CONDITIONS

1. General Conditions shall consist of the American Institute of Architects AIA Document #A-201, 2017 Edition, entitled "General Conditions of the Contract for Construction", and are as much a part of these specifications as if bound herein. A copy of the General Conditions is on file and may be examined in the Architect's office.

END OF SECTION 007200

SECTION 007300 - SUPPLEMENTARY CONDITIONS

1. INSURANCE

1.1 General: The Contractor shall not commence work under this contract until he has obtained all insurance required under this paragraph and such insurance has been approved. The Contractor shall not allow any subcontractor to commence work on this subcontract until all similar insurance required of the subcontractors has been obtained. The minimum insurance coverages listed below shall in no way limit the Contractor from any other obligations or liabilities.

1.2 Certificates of Insurance: The Contractor shall furnish Certificates of Insurance to the Owner and the Architect showing that he carries the following insurance:

Workmen's Compensation	Statutory Limit
Personal Injury Liability	$ 500,000 for each person injured
	$1,000,000 for each accident
Property Damage Liability	$500,000 for each accident
	$1,000,000 Aggregate
Insurance Umbrella	$2,000,000

Insurance in said amounts shall be maintained throughout the life of the contract. The Contractor's insurance shall include coverage against the hazards of explosion, collapse, and underground damage. Failure to file certificates or acceptance by the Owner of certificates of insurance which do not indicate coverage as specified herein, shall in no way relieve the Contractor of his responsibility for maintaining adequate insurance.

1.3 The Contractor shall obtain and maintain Builder's Risk Insurance coverage to protect the interest of the Owner. The limits of the Builder's Risk policy shall be equal to total contract sum. A certificate evidencing the type and amount of Builder's Risk insurance shall be submitted to the Owner at the time of execution of contract.

1.4 Subcontractor's Insurance: Each subcontractor shall maintain liability insurance same as required to be maintained by the prime Contractor, and the limits of liability shall not be less than those required to be maintained by the prime Contractor, except that the Contractor may elect to permit deviations as follows:

Lesser limits may be maintained by subcontractors if their operations are covered to the specified limits by the insurance maintained by the prime Contractor.

Subcontractors whose work does not involve such hazards are not required to maintain coverage against the hazards of explosion, collapse, and underground damage.

Certificates of such insurance shall be filed with the prime Contractor, but failure to file certificates, or acceptance by the prime Contractor of certificates of insurance which do not indicate coverage as specified herein, shall in no way relieve the subcontractor of his responsibility for maintaining adequate insurance. Requirements of the Prime Agreements shall govern over and mandate required insurance and coverages listed in this section, whether listed or omitted.

NOTE: Nothing in this section shall create any obligation on the part of the Owner or Architect to see that the specified insurance is maintained.

1.5 Automobile Liability Insurance: The Contractor shall take out and maintain during the life of this contract, such Automobile Bodily Injury Liability Insurance with a combined single limit of $1,000,000 each accident.

1.6 Before commencing any work on this project, the Contractor shall submit in duplicate all insurance policies and Certificates of Insurance to the offices of the Owner and the Architect for examination and approval. Any renewals of these insurance documents, policies, and certificates of insurance shall be submitted to the Owner before the original policies and certificates have expired.

2. SHOP DRAWINGS: The Architect is under no obligation to check on any shop drawings until the completed (not only in number but also in adequacy of information supplied) drawings for that trade are in his hands. The Contractor is to submit the number of copies of drawings required by the parts of the specifications relating to that trade; if no specific number of copies is mentioned in a particular section, then six (6) copies of shop drawings will be required. The Architect may, at his option, require PDF copies of shop drawings for review and record, and, after correcting the information may have the necessary number of prints made and distributed at the expense of the party submitting the shop drawing for approval. After shop drawings have been approved by the Architect, it shall be the duty of the Contractor to see that all subcontractors or materialmen requiring information regarding work to be done or materials to be supplied, that may be affected by said shop drawings shall be supplied with copies of such drawings and given such information as they may require for their guidance.

3. RECORD DRAWINGS: The Contractor shall, during the progress of the work, keep an accurate record of all changes and corrections from the layouts shown on the drawings. Record of changes may be kept by accurately making all changes on a set of prints during the progress of the job. Exact location of all underground utility service entrances and their connections to utility mains, as well as all valves, etc., which will be concealed in the finished work, shall be accurately indicated on the drawings by measured distances. Upon completion of the work and prior to final payment, the Contractor shall furnish to the Architect and the Owner one set of record prints, legibly and accurately marked to indicate all changes, additions, deletions, etc. from the contract drawings.

4. MEASUREMENT: Discrepancies shall be called to the attention of the Architect before work is installed. No work which is to be installed in the building shall be laid out according to figured dimensions when work already installed may govern these dimensions; verify all dimensions at job before laying out shop drawings or shop work. The Contractor will be responsible for any mistakes which may be attributed to failure to follow these instructions. The Architect is not responsible for any discrepancies in figured dimensions.

5. SPECIFICATIONS AND DRAWINGS: In all cases, large scale details shall take precedence over small scale general drawings. In cases where floor elevations are shown, these are to be checked carefully against detailed sections, and the Contractor will be responsible for all heights shown or marked on small scale drawings.

6. LAYING OUT WORK

6.1 A competent foreman or superintendent shall be kept by the Contractor at the building at all times during the progress of the work. He shall receive instructions and act for the Contractor in the accurate laying out and direction of all work.

6.2 The Contractor shall have limited use of the site and shall limit his activities as nearly as possible to areas to receive new work. Contractor shall coordinate all activities, storage areas, and hours for construction with the Owner's Representative.

7. OBSERVATION OF WORK BY THE ARCHITECT

7.1 The Architect and his representative shall at all times have access to the work wherever it is in preparation or progress, and the Contractor shall provide facilities for such access and for building observations.

7.2 Special Test or Approval: If, for any reason, the work requires special tests or approval, the Contractor shall give the Architect timely notice of the work's readiness; and if the observations are by another authority other than the Architect, the Architect shall be notified of the date fixed for such. If any work should be covered up without approval or consent of the Architect, it must, if required by the Architect, be uncovered for examination at the Contractor's expense.

7.3 Re-examination of questioned work may be ordered by the Architect, and if so ordered, the work must be uncovered by the Contractor. If such work be found in accordance with the contract documents, the Owner shall pay the cost of re-examination and replacement. If such work be found not in accordance with the contract documents, the Contractor shall pay such cost.

7.4 Special Observations by the Architect: The Contractor shall notify the Architect when the work reaches the following stages of construction so that special observations of the work may be accomplished prior to the covering up of these items:

7.4.1 Demolition of existing conditions.

7.4.2 All new or re-worked utilities in place and tested, but not covered.

7.4.3 Two weeks prior to substantial completion of Project.

Contractor's notice to Architect shall be at least twenty-four (24) hours prior to the time set for the viewing.

8. TEMPORARY TOILETS: The general construction contractor shall install temporary toilets. Toilets shall be sufficient in number to take care of all workmen. Proper means of waste disposal shall be provided by the Contractor. Sanitary accommodations must conform to health laws and must be used by workmen.

9. WATER: The Owner will furnish and pay for all water for construction purposes.

10. ELECTRIC POWER: The Owner will furnish and pay for temporary electrical power for construction purposes.

11. CHANGE ORDERS: Shall be processed by the Contractor in accordance with the General Conditions.

12. CONTRACT BREAKDOWN: Within one week after receipt of the Notice to Proceed, the Contractor shall submit a construction "BAR GRAPH" for approval and coordination with the Owner.

13. RESPONSIBILITIES OF CONTRACTOR

13.1 The undertaking of periodic site visits and building observations by the Architect shall not be construed as supervision or actual construction nor make him responsible for providing a safe place for the performance of work by Contractors or Contractor's employees or those of suppliers or subcontractors or for access, visits, use, work, travel, or occupancy by any person.

13.2 All construction procedures and equipment used in the construction of these facilities must meet all of the requirements of the local and national standards and codes. The General Contractor shall be responsible for enforcing those standards and codes.

14. TIME FOR COMPLETION

14.1 The date of beginning and the time for completion of the WORK are essential conditions of the CONTRACT DOCUMENTS and the WORK embraces shall be commenced on a date specified in the NOTICE TO PROCEED.

14.2 The CONTRACTOR will proceed with the WORK at such rate of progress to insure full completion within the CONTRACT TIME. It is expressly understood and agreed, by and between the CONTRACTOR and the OWNER, that the CONTRACT TIME for the completion of the WORK described herein is a reasonable time, taking into consideration the average climatic and economic conditions and other factors prevailing in the locality of the WORK.

15. PAYMENT: The Contractor shall be paid for work complete and properly stored materials on a monthly basis. Only ninety-five percent (95%) of each monthly estimate approved during construction of the project shall be paid by the Owner to the Contractor prior to completion of construction, and the Certificate of Payment shall be for this percentage. Each application for payment shall be made on AIA Document G702 and AIA Document G703. Additionally, with each application, starting with the second application, the Contractor shall submit a notarized Waiver and Release of Lien, in the form attached hereto, from all manufacturers, materialmen, sub-contractors, and others furnishing services and/or materials for the Project.

16. WAIVER AND RELEASE OF LIEN AFFIDAVIT: Prior to Substantial Completion by the CONTRACTOR of the Project, and prior to the receipt of payment of any amount in excess of ninety-five percent (95%) of the total final contract dollar amount, the CONTRACTOR shall obtain and deliver in duplicate to the OWNER, through the Architect, a notarized Waiver and Release of Lien, in the form attached hereto, from all manufacturers, materialmen, subcontractors, and others furnishing services and/or materials for the Project.

These documents shall be accompanied by an Affidavit, signed and notarized by the CONTRACTOR, or his legal Representative, certifying that all persons providing labor have been paid and listing names of all suppliers, material men, subcontractors, and others providing goods and/or services for the Project.

END OF SECTION 007300

SECTION 007346 - PREVAILING WAGE SCHEDULE

This Proposal and Contract shall be based upon the required payments by the Contractor of not less than the prevailing hourly rate of wage for each craft or type of workman required to execute the Contract. See said schedule, Hourly Wage Rates, bound therein and made a part hereof.

The Contractor and subcontractors shall keep an accurate record showing the names and occupations of all workmen employed by him, together with the actual wages paid to each workman, which shall be open to inspection at all reasonable hours by a representative of the Owner.

All prevailing hourly wage rates shall be kept posted in a prominent and easily accessible place at the project site. Such notice shall remain posted during the full time that any workman shall be employed on the projects.

END OF SECTION 007346

Missouri

Division of Labor Standards

WAGE AND HOUR SECTION

MIKE KEHOE, Governor

Annual Wage Order No. 32

Section 049

JASPER COUNTY

In accordance with Section 290.262 RSMo 2000, within thirty (30) days after a certified copy of this Annual Wage Order has been filed with the Secretary of State as indicated below, any person who may be affected by this Annual Wage Order may object by filing an objection in triplicate with the Labor and Industrial Relations Commission, P.O. Box 599, Jefferson City, MO 65102-0599. Such objections must set forth in writing the specific grounds of objection. Each objection shall certify that a copy has been furnished to the Division of Labor Standards, P.O. Box 449, Jefferson City, MO 65102-0449 pursuant to 8 CSR 20-5.010(1). A certified copy of the Annual Wage Order has been filed with the Secretary of State of Missouri.

Original Signed by
Logan Hobbs, Director
Division of Labor Standards

Filed With Secretary of State: **March 10, 2025**

Last Date Objections May Be Filed: **April 9, 2025**

Prepared by Missouri Department of Labor and Industrial Relations

OCCUPATIONAL TITLE	**Prevailing Hourly Rate
Asbestos Worker	$34.92
Boilermaker	$28.82*
Bricklayer-Stone Mason	$28.82*
Carpenter	**$52.44**
Lather	
Linoleum Layer	
Millwright	
Pile Driver	
Cement Mason	$41.31
Plasterer	
Communication Technician	$28.82*
Electrician (Inside Wireman)	$50.49
Electrician Outside Lineman	$28.82*
Lineman Operator	
Lineman - Tree Trimmer	
Groundman	
Groundman - Tree Trimmer	
Elevator Constructor	$28.82*
Glazier	$28.82*
Ironworker	$28.82*
Laborer	$40.80
General Laborer	
First Semi-Skilled	
Second Semi-Skilled	
Mason	$28.82*
Marble Mason	
Marble Finisher	
Terrazzo Worker	
Terrazzo Finisher	
Tile Setter	
Tile Finisher	
Operating Engineer	$28.82*
Group I	
Group II	
Group III	
Group III-A	
Group IV	
Group V	
Painter	$38.49
Plumber	$55.58
Pipe Fitter	
Roofer	$44.74
Sheet Metal Worker	$52.19
Sprinkler Fitter	$28.82*
Truck Driver	$28.82*
Truck Control Service Driver	
Group I	
Group II	
Group III	
Group IV	

*The Division of Labor Standards received fewer than 1,000 reportable hours for this occupational title. The public works contracting minimum wage is established for this occupational title using data provided by Missouri Economic Research and Information Center.
**The Prevailing Hourly Rate includes any applicable fringe benefit amounts for each occupational title as defined in RSMo Section 290.210.

Heavy Construction Rates for
JASPER County

Section 049

OCCUPATIONAL TITLE	**Prevailing Hourly Rate
Carpenter	$28.82*
Millwright	
Pile Driver	
Electrician (Outside Lineman)	$28.82*
Lineman Operator	
Lineman - Tree Trimmer	
Groundman	
Groundman - Tree Trimmer	
Laborer	$45.92
General Laborer	
Skilled Laborer	
Operating Engineer	$64.15
Group I	
Group II	
Group III	
Group IV	
Truck Driver	$28.82*
Truck Control Service Driver	
Group I	
Group II	
Group III	
Group IV	

Use Heavy Construction Rates on Highway and Heavy construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(3).

Use Building Construction Rates on Building construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(2).

If a worker is performing work on a heavy construction project within an occupational title that is not listed on the Heavy Construction Rate Sheet, use the rate for that occupational title as shown on the Building Construction Rate Sheet.

*The Division of Labor Standards received fewer than 1,000 reportable hours for this occupational title. Public works contracting minimum wage is established for this occupational title using data provided by Missouri Economic Research and Information Center.

**The Prevailing Hourly Rate includes any applicable fringe benefit amounts for each occupational title.

OVERTIME
and
HOLIDAYS

OVERTIME

For all work performed on a Sunday or a holiday, not less than twice (2x) the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed or the public works contracting minimum wage, whichever is applicable, shall be paid to all workers employed by or on behalf of any public body engaged in the construction of public works, exclusive of maintenance work.

For all overtime work performed, not less than one and one-half (1½) the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed or the public works contracting minimum wage, whichever is applicable, shall be paid to all workers employed by or on behalf of any public body engaged in the construction of public works, exclusive of maintenance work or contractual obligation. For purposes of this subdivision, **"overtime work"** shall include work that exceeds ten hours in one day and work in excess of forty hours in one calendar week; and

A thirty-minute lunch period on each calendar day shall be allowed for each worker on a public works project, provided that such time shall not be considered as time worked.

HOLIDAYS

January first;
The last Monday in May;
July fourth;
The first Monday in September;
November eleventh;
The fourth Thursday in November; and
December twenty-fifth;

If any holiday falls on a Sunday, the following Monday shall be considered a holiday.

SECTION 010000 - GENERAL REQUIREMENTS

1. SCOPE

Provide all items, articles, materials, testing, tools, operations, or methods listed mentioned, scheduled on drawings, and/or herein specified.

2. GENERAL

2.1 General Contractor and all subcontractors shall coordinate with adjacent work and other trades to facilitate general progress or work. Each trade shall afford their trades reasonable opportunity for installation of work and material storage.

2.1.1 Contractor shall contact all “utilities” and Owner’s Representative to verify all utility locations and any buried communication wiring, electrical, gas, sanitary sewer(s), storm sewers, etc.

2.2 Provide, maintain, watertight, heated office when required by Architect. Provide with doors, locks and windows, for use of Contractor, subcontractors, and Architect. Provide with telephone at no cost to the Owner.

2.3 Verify grades, lines, levels, dimensions shown on drawings. Report errors, inconsistencies to Architect before commencing work. Provide and maintain well built batter boards. Establish two widely separated bench marks.

2.4 Furnish, maintain temporary stairs, ladders, ramps, scaffolds, hoist, runways, chutes, etc., required for execution of all trades; conform to state and local laws applicable.

2.5 General Contractor shall protect all of the Owner's buildings, finishes and equipment from damage. Protection devices such as dust curtains, temporary walls, etc., will be erected and installed in accordance with Owner’s requirements. Protection of equipment shall be verified with Owner prior to bidding.

2.6 The General contractor shall furnish and install temporary barricades, fences, signs as required by codes or the Owner to protect any open ditches or hazardous conditions.

2.7 Manufactured articles, material, equipment to be applied, installed, connected, erected, used, cleaned, conditioned as directed by manufacturer

2.8 All work shall comply with all local, state, and national codes and agencies which govern the work to be performed. Unless otherwise stated, or where municipal codes govern, the following codes shall apply:

2.8.1 2018 IBC, as adopted by MSSU.

2.9 The Contractor shall have limited access and storage facilities on Owner’s property. Storage for construction purposes will be in a central, secured area which must be approved by the Owner. Contractor shall assume full responsibility for protection of stored items.

3. SPECIAL CONDITIONS

3.1 The Contractor shall coordinate his construction and use of the site with the Owner prior to start of construction.

3.2 The Owner reserves the right to take possession and use any completed or partially completed portion of the new work regardless of the time of completion of the entire project, providing it does not interfere with the Contractor’s work. Such taking possession or use of the project or part thereof shall not be construed as final acceptance or approval, or any portion thereof, or as acknowledgement of the fulfillment of the terms of the contract. The Owner has purchased or has existing materials and equipment that will be installed by others in the project which this contract for construction includes. The Contractor shall coordinate his work with the Owner and other contractors to facilitate the installation of equipment by Owner.

3.3 The Contractor is required to secure area around construction site. Such barriers shall be used for the purpose of preventing injury to those who are not working on the Construction Project at the site and shall not be removed until authorized by Owner's representative. This requirement shall not limit Contractor from any other safety or protective measures he deems necessary to adequately protect those present at site from injury.

4. SCHEDULES AND REPORTS

4.1 PRE-CONSTRUCTION CONFERENCE: Prior to beginning construction, after the Notice to Proceed has been issued, a meeting will be held at the place and time designated by the Architect for the purpose of discussing:

4.1.1 Construction Schedule
4.1.2 Critical areas of the work
4.1.3 Inspection procedures
4.1.4 Coordination of prime Contractors
4.1.5 Field Orders and Change Orders
4.1.6 Shop drawings
4.1.7 Other items as deemed necessary by the Architect or Owner.

4.2 The following people or their authorized representative are required in attendance at the Pre-Construction Conference

4.2.1 Owner
4.2.2 Architect
4.2.3 General Contractor
4.2.4 Major Contractors / Subcontractors

4.3 PROGRESS REPORTS: The General Contractor shall submit monthly progress reports to the Architect showing each major item of the work, the current percentage of completion, and whether ahead or behind schedule. Any delays beyond the General Contractor’s control, such as weather, strikes, etc., that delay the project’s completion, are to be documented and turned in along with this report to the Architect. Orders for all materials must be placed within thirty (30) days after award of the contract, and evidence of such orders furnished to the Architect. These requirements will be considered mandatory prior to any approval of monthly pay request by the Architect.

4.4 TESTS OF MATERIALS:

4.4.1 Furnish materials and equipment that have been properly inspected and tested in accordance with accepted industries standards. Field or laboratory tests where specified herein, the costs of such being paid for by Owner.

4.4.2 Should such tests or visual observation indicate failure of the materials or construction to meet requirements of drawings and/or specifications, Contractor shall make and pay for additional tests, as directed by the Architect, until compliance has been proven, and should such work fail to comply, Contractor shall replace it at his expense.

END OF SECTION 010000

SECTION 011100 - SUMMARY OF WORK

RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

PROJECT/WORK IDENTIFICATION

GENERAL: Project name: An Interior Renovation for the Lower Level of Mayes Hall at Missouri Southern State University.

The Work: Interior Renovation at an existing facility. Scope of work includes General Construction, modifications to existing MEP systems to accommodate intended design utilizing existing systems, Finishes, adjustments to existing sprinkler and fire alarm systems to accommodate intended design.

The work includes providing all labor, materials, equipment, supervision, accessories, appliances, hauling, storage, tools and incidents necessary for the construction and completion of the work according to the Contract Documents.

Contract Documents indicate the work of the Contract and related requirements and conditions that have an impact on the project. Requirements and conditions that are indicated in the Contract Documents include, but are not necessarily limited to, the following:

Existing site conditions and restrictions on use of the site.

Summary by References: Work of the Contract can be summarized by references to the Contract, General Conditions, Supplementary Conditions, Specification Sections, Drawings, addenda, and modifications to the contract documents issued subsequent to the initial printing of the contract documents and including, but not necessarily limited to, printed material referenced by any of these. It is recognized that work of the Contract is also unavoidably affected or influenced by governing regulations and building codes.

PERMITS AND INSPECTIONS

Secure, schedule, coordinate and pay for all permits, licenses and inspections required by codes, ordinances, statutes, administrative regulations, national standards, etc., which bear on the Work. The Contract Documents list certain codes, etc., but such listing is not all inclusive. All contractors must obtain a local business license.

Governing Building Codes and their editions intended to be used for this project are:

AS OUTLINED IN THE PLANS AND/OR SPECIFICATIONS

CONTRACTOR USE OF PREMISES

General: The Contractor shall limit his use of the premises to the work indicated, so as to allow for Owner occupancy and use by the public.

Use of the Site: Confine operations at the site to the areas permitted under the Contract. Portions of the site beyond areas on which work is indicated are not to be disturbed. Conform to the site rules and regulations affecting the work while engaged in project construction.

OWNER OCCUPANCY

Partial Owner Occupancy: The Owner reserves the right to place and install equipment as necessary in completed areas of the work to occupy such areas prior to substantial completion, provided that such occupancy does not substantially interfere with completion of work. Such placing of equipment and partial occupancy shall not constitute acceptance of work or any part of the work.

END OF SECTION 011100

SECTION 012300 - ALTERNATES

The following Alternates shall be used for completing the BID FORM:

ALTERNATE NO. 1: The Contractor shall provide a cost to **ADD** the work as outlined in the PLANS for Laundry Room 112.

ALTERNATE NO. 2: The Contractor shall provide a cost to **ADD** the sidewalk as shown on A101 to connect to the existing sidewalk. Contractor shall provide a 4" min. thick sidewalk with control joints over base rock, to include radius flares where abutting existing sidewalk. Sidewalk shall be reinforced. Field Verify length (approximately 21').

END OF SECTION 012300

SECTION 012500 - SUBSTITUTION PROCEDURES

1. GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for substitutions made prior to and after award of Contract.

B. Related Sections:

1. Division 0 through 32 for specific requirements and limitations for substitutions.

C. Standards: Industry standards to products specified.

1.3 DEFINITIONS

A. Definitions used in this Article are not intended to change or modify the meaning of other terms used in the Contract Documents.

B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.

2. Substitutions for Convenience: Changes proposed in order to meet other Project requirements but may offer advantage to the Owner.

C. The following are not considered substitutions:

1. Revisions to the Contract Documents requested by the Owner or Architect/Engineer (A/E).

2. Specified options of products and construction methods included in the Construction Documents.

1.4 PRE-BID SUBSTITUTIONS

A. The naming of specified items on the drawings or in the specifications means that such named items are specifically desired by the A/E and/or Owner. If the words "or equal" or "or approved substitute" follows such named items, substitution requests may be submitted. **REQUESTS FOR SUBSTITUTIONS MUST BE RECEIVED BY ARCHITECT/ENGINEER (A/E) NOT LATER THAN SEVEN (7) BUSINESS DAYS PRIOR TO BID OPENING.**

B. No substitutions will be considered after receipt of bids unless conditions outlined in Part 2.1 are met as determined by the A/E. Any substitutions considered per Part 2.1 shall be subject to A/E and Owner's approval.

C. Substitution Request Submittal Procedures: Substitution requests must be submitted on Substitution Request Form and Contractor's Statement of Conformance, found at the end of this Section. ***NOTE: Substitution Request forms will only be accepted/reviewed when sent directly from the Bidding Contractor to the Architect.***

1. Request for Substitution must name the exact item proposed with complete information included as specified on the forms.

2. All backup data required to sufficiently determine the product's specifications must be attached to the Substitution Request forms.

3. Only one product or system may be included in each Substitution Request; use separate Substitution Request forms for each product or system submitted.

4. Submit Substitution Request forms and backup data combined into one Portable Data Format (PDF) file.

5. The Substitution Request PDF file shall be named with applicable specification section number, followed by a brief description of the item submitted for review; i.e., 09511_AcousticalCeilingPanels.pdf.

6. Submit Substitution Request PDF file as directed by the Architect/Engineer.
7. Incomplete Substitution Requests will not be reviewed.
8. Substitution Requests submitted in a manner that does not comply with these requirements will not be reviewed.
9. Submit physical samples as directed by the Architect/Engineer if requested.

D. The Architect/Engineer is the sole judge as to the equality of proposed substitutions. Only Substitution Requests approved in writing by the Architect/Engineer are valid.

E. If any substitution will affect a correlated function, adjacent construction, or the work of other trades or contractors, the necessary changes and modifications to the affected work will be considered as part of the substitution, to be accomplished without additional cost to the Owner, if and when accepted.

F. The Architect/Engineer will review substitution requests submitted in accordance with the terms and conditions of these Contract Documents within ten days prior to the Bid Opening date. The Architect/Engineer is not obligated or required to review any and all substitution requests. The Architect/Engineer is not obligated to inform bidders of incomplete and non-accepted requests.

G. Acceptance of substitutions will be indicated in writing by Addendum.

H. Under no circumstances shall be Architect/Engineer's acceptance of any such substitution relieve the Contractor from any terms and conditions of the Contract Documents, including timely, full and proper performance of the work.

1.5 SUBMITTALS

A. Substitution Request Submittals: Requests for substitution may be considered after commencement of the Work subject to conditions listed under Part 2.1. Requests received more than 30 days after commencement of the Work may be considered or rejected at the discretion of the Architect/Engineer. ***NOTE: Substitution Request forms will only be accepted/reviewed when sent directly from the Bidding Contractor to the Architect.***

1. Substitution Request Submittal Procedures: Submit Substitution Requests as directed by the Architect/Engineer.
2. Identify product or fabrication or installation method to be replaced in each request. Include Specification Section number and title and Drawing numbers and titles.
3. Substitution Request Form: Use Substitution Request Form and Contractor's Statement of Conformance found at the end of this Section.
4. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.

b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.

c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable specification section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features, and requirements indicated. Indicate deviations, if any, from the Work specified.

d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.

e. Samples, where applicable or requested.

f. Certificates and qualification data, where applicable or requested.

g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.

h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance and requirements indicated.

i. Research reports evidencing compliance with building code in effect for Project.

j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.

k. Cost information, including a proposal of change, if any, in the Contract Sum.

l. Contractor's certification that proposed substitution is equal to or better in every significant respect and complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated and will perform adequately in the application indicated.

m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

5. Architect/Engineer's Action: If necessary, Architect/Engineer will request additional information or documentation for evaluation within seven days of receipt of a request for substitution.

B. Submittal Procedure:

1. Substitution requests must be submitted on Substitution Request Form and Contractor's Statement of Conformance, found at the end of this Section.

2. Request for substitution must name the exact item proposed with complete information included as specified on the forms.

3. All backup data required to sufficiently determine the product's specifications must be attached to the Substitution Request forms.

4. Only one product or system may be included in each substitution request; use separate Substitution Request Forms for each product or system submitted.

5. Submit Substitution Request Forms and backup data combined into one Portable Data Format (PDF) file.

6. The Substitution Request PDF file shall be named with applicable specification section number, followed by a brief description of the item submitted for review.

7. Submit Substitution Request PDF file as directed by the Architect/Engineer.

8. Incomplete Substitution Requests will not be reviewed.

9. Substitution Requests submitted in a manner that does not comply with these requirements will not be reviewed.

10. Submit physical samples as directed by the Architect/Engineer if requested.

1.6 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage qualified testing agency to perform compatibility tests recommended by manufacturers.

1.7 PROCEDURES

A. Coordination: Modify or adjust affected work as necessary to integrate work of the approved substitutions at no additional cost to Owner.

2. PRODUCTS

2.1 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution immediately upon discovery of need for change, but not later than 30 days prior to time required for preparation and review of related submittals.

1. Conditions: Architect/Engineer will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect/Engineer will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution is consistent with the Contract Documents and will produce indicated results.

b. The request is directly related to an "or equal" clause or similar language in the Contract Documents.

c. The specified product or method of construction cannot be provided within the Contract Time.

d. The specified product or method of construction cannot be provided in a manner that is compatible with other materials, and where the Contractor certifies that the substitution will overcome the incompatibility.

e. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provide the required warranty.

f. Substitution request is fully documented and properly submitted.

g. Requested substitution will not adversely affect Contractor's construction schedule.

h. Requested substitution has received necessary approvals of authorities having jurisdiction.

i. Requested substitution is compatible with other portions of the Work.

j. Requested substitution has been coordinated with other portions of the Work.

k. Requested substitution provides specified warranty.

l. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Architect/Engineer may consider requests for substitution if received within 30 days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Architect/Engineer.

1. Conditions: Architect/Engineer will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect/Engineer will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations of merit, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect/Engineer for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.

b. Requested substitution does not require revisions to the Contract Documents.

c. Requested substitution is consistent with the Contract Documents and will produce indicated results.

d. Substitution request is timely, fully documented and submitted in accordance with the requirements of this Section.

e. Requested substitution will not adversely affect Contractor's construction schedule.

f. Requested substitution has received necessary approvals of authorities having jurisdiction.

g. Requested substitution is compatible with other portions of the Work.

h. Requested substitution has been coordinated with other portions of the Work.

i. Requested substitution provides specified warranty.

j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

C. The Contractor's submittal and Architect/Engineer's acceptance of Shop Drawings, Product Data or Samples that relate to construction activities not complying with the Contract Documents does not constitute an acceptable or valid request for substitution, nor does it constitute approval.

END OF SECTION 012500

SUBSTITUTION REQUEST FORM

TO: **Corner Greer Architects**
716 S Main Street
Joplin, MO 64801
Phone: (417) 206-3134
info@cornergreer.com

PROJECT: **MSSU – Mayes Hall SLC – Interior Renovation**

CONTRACTOR'S REQUEST, WITH SUPPORTING DATA

A. Reason for Substitution Request: _____

B. Specifications to which this request applies: _____ Section _____ Page _____ Paragraph

☐ Product Data for proposed substitution attached (description of product, reference standards, performance and test data.)

☐ Sample is attached. ☐ Sample will be sent if requested by Architect/Engineer.

C. Itemized comparison of proposed substitution with product specified:

	ORIGINAL PRODUCT	PROPOSED SUBSTITUTION
Name, brand:		
Catalog No.:		
Manufacturer:		
Significant Variations:		

D. Unit costs of original product and proposed substitution. State whether cost is for

☐ material only, ☐ material installed, or ☐ Life Cycle cost of installed product.

E. Proposed change in Contract Sum:

Credit to Owner: $_____ Additional Cost to Owner: $_____

F. Proposed Change in Contract Time: ☐ Reduce ☐ Increase by ____ days ☐ No change

G. Effect of proposed substitution on other parts of the Work, or on other Contracts:

_____

_____

BELOW IS FOR INTERNAL USE ONLY

Reviewed By: Date:

Comments:

CONTRACTORS STATEMENT OF CONFORMANCE OF PROPOSED SUBSTITUTION TO CONTRACT DOCUMENTS

I / We have investigated the proposed substitution. I / We:

1. believe that it is equal or superior in all respects to the originally specified product, except as stated in Paragraph C of the Post-Bid Request for Substitution Form;
2. will provide the same warranty as required in AIA A201 General Conditions;
3. will provide the same special warranty or guaranty as specified;
4. have included all cost data and cost implications of the proposed substitution;
5. will pay redesign and special inspection costs caused by the use of this product;
6. will pay additional costs to other contractors caused by the substitution;
7. will coordinate the incorporation of the proposed substitution in the Work;
8. will modify other parts of the Work as may be needed, to make all parts of the Work complete and functioning;
9. waive future claims for added cost to Contractor caused by the proposed substitution.

Contractor: _____ _____
Signature Date

_____ _____
Firm Telephone

_____
Address City, State Zip

_____

ARCHITECT/ENGINEER'S REVIEW AND ACTION

Provide more information in the following categories. Resubmit.

_____

_____

Sign Contractor's Statement of Conformance. Resubmit.

The proposed substitution is approved with the following conditions:

_____

_____

The proposed substitution request is rejected.

The following changes will be made by Change Order:

Addition to / deduction from the Contract Sum: $ _____

Addition to / deduction from the Contract Time: _____ days.

By: **Date:** _____

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

1.3 MINOR CHANGES IN THE WORK

A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time.

1.4 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: General Contractor will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. The Architect will compile the Proposal Request and issue a Construction Change Directive (CCD). If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Work Change Proposal Requests issued by General Contractor are not instructions either to stop work in progress or to execute the proposed change.
2. Within time specified in Proposal Request after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

    a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    c. Include costs of labor and supervision directly attributable to the change.
    d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Proposal Request Form: Use form acceptable to Architect.

1.5 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Work Change Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor.

1.6 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: Architect may issue a Construction Change Directive. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order, if applicable.

1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

END OF SECTION 012600

SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

B. Related Requirements:

1. Section 012600 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
2. Section 013200 "Construction Progress Documentation" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

1.3 DEFINITIONS

A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.

1. Coordinate line items in the schedule of values with items required to be indicated as separate activities in Contractor's construction schedule.
2. Submit the schedule of values to Architect at earliest possible date, but no later than seven days before the date scheduled for submittal of initial Applications for Payment.
3. Subschedules for Separate Elements of Work: Where the Contractor's construction schedule defines separate elements of the Work, provide subschedules showing values coordinated with each element.

B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.

1. Identification: Include the following Project identification on the schedule of values:

a. Project name and location.

b. Name of Architect.
c. Architect's Project number.
d. Contractor's name and address.
e. Date of submittal.

2. Arrange schedule of values consistent with format of AIA Document G703.
3. Arrange the schedule of values in tabular form, with separate columns to indicate the following for each item listed:

a. Related Specification Section or Division.
b. Description of the Work.
c. Name of subcontractor.
d. Name of manufacturer or fabricator.
e. Name of supplier.
f. Change Orders (numbers) that affect value.
g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent. Round dollar amounts to whole dollars, with total equal to Contract Sum.

1) Labor.
2) Materials.
3) Equipment.

4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Provide multiple line items for principal subcontract amounts in excess of five percent (5%) of the Contract Sum.
5. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.

a. Differentiate between items stored on-site and items stored off-site.

6. Overhead Costs: Include total cost and proportionate share of general overhead and profit for each line item.
7. Closeout Costs. Include separate line items under Contractor and principal subcontracts for Project closeout requirements in an amount totaling five percent (5%) of the Contract Sum and subcontract amount.
8. Schedule of Values Revisions: Revise the schedule of values when Change Orders or Construction Change Directives result in a change in the Contract Sum. Include at least one separate line item for each Change Order and Construction Change Directive.

1.5 APPLICATIONS FOR PAYMENT

A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.

B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.

C. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.

1. Other Application for Payment forms proposed by the Contractor shall be acceptable to Architect and Owner. Submit forms for approval with initial submittal of schedule of values.

D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.

1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.

E. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.

1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment for stored materials.
2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
3. Provide summary documentation for stored materials indicating the following:

    a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
    b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
    c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.

F. Transmittal: Submit one electronic signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt. One copy shall include waivers of lien and similar attachments if required.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

G. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.

1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
2. When an application shows completion of an item, submit conditional final or full waivers.
3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
5. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.

H. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:

1. List of subcontractors.
2. Schedule of values.
3. Contractor's construction schedule (preliminary if not final).
4. Combined Contractor's construction schedule (preliminary if not final) incorporating Work of multiple contracts, with indication of acceptance of schedule by each Contractor.
5. Products list (preliminary if not final).
6. Sustainable design action plans, including preliminary project materials cost data.
7. Submittal schedule (preliminary if not final).
8. List of Contractor's staff assignments.
9. List of Contractor's principal consultants.
10. Copies of building permits.
11. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
12. Initial progress report.
13. Report of preconstruction conference.
14. Certificates of insurance and insurance policies.
15. Performance and payment bonds.
16. Data needed to acquire Owner's insurance.

I. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

J. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.
2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. AIA Document G706.

5. AIA Document G706A.
6. AIA Document G707.
7. Evidence that claims have been settled.
8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Startup construction schedule.
2. General Contractor's Construction Schedule.
3. Construction schedule updating reports.
4. Daily construction reports.
5. Material location reports.
6. Site condition reports.
7. Unusual event reports.

1.3 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction Project. Activities included in a construction schedule consume time and resources.

1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
2. Predecessor Activity: An activity that precedes another activity in the network.
3. Successor Activity: An activity that follows another activity in the network.

B. Cost Loading: The allocation of the schedule of values for completing an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum.

C. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.

D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

E. Event: The starting or ending point of an activity.

F. Float: The measure of leeway in starting and completing an activity.

1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

G. Resource Loading: The allocation of manpower and equipment necessary for completing an activity as scheduled.

1.4 INFORMATIONAL SUBMITTALS

A. Format for Submittals: Submit required submittals in the following format:

1. Working electronic copy of schedule file, where indicated.
2. PDF file.

B. Startup construction schedule.

1. Submittal of cost-loaded, startup construction schedule will not constitute approval of schedule of values for cost-loaded activities.

C. Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.

D. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

1. Submit a working digital copy of schedule, using software indicated, and labeled to comply with requirements for submittals.

E. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.

1. Activity Report: List of activities sorted by activity number and then early start date, or actual start date if known.
2. Logic Report: List of preceding and succeeding activities for each activity, sorted in ascending order by activity number and then by early start date, or actual start date if known.
3. Total Float Report: List of activities sorted in ascending order of total float.
4. Earnings Report: Compilation of Contractor's total earnings from the Notice to Proceed until most recent Application for Payment.

F. Construction Schedule Updating Reports: Submit with Applications for Payment.

G. Daily Construction Reports: Submit at weekly intervals.

H. Material Location Reports: Submit at monthly intervals.

I. Site Condition Reports: Submit at time of discovery of differing conditions.

J. Unusual Event Reports: Submit at time of unusual event.

K. Qualification Data: For scheduling consultant.

1.5 QUALITY ASSURANCE

A. Prescheduling Conference: Conduct conference at Project to Review methods and procedures related to the preliminary construction schedule and Contractor's Construction Schedule, including, but not limited to, the following:

1. Review software limitations and content and format for reports.
2. Verify availability of qualified personnel needed to develop and update schedule.
3. Discuss constraints, including phasing, work stages, area separations, interim milestones, and partial Owner occupancy.
4. Review delivery dates for Owner-furnished products.
5. Review schedule for work of Owner's separate contracts.
6. Review submittal requirements and procedures.
7. Review time required for review of submittals and resubmittals.
8. Review requirements for tests and inspections by independent testing and inspecting agencies.
9. Review time required for Project closeout and Owner startup procedures.
10. Review and finalize list of construction activities to be included in schedule.
11. Review procedures for updating schedule.

1.6 COORDINATION

A. Coordinate Contractor's Construction Schedule with the schedule of payments, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from entities involved.
2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

1.7 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

B. Time Frame: Extend schedule from date established for the Notice to Proceed to date of final completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

C. Activities: Treat each floor or separate area as a separate numbered activity for each main element of the Work. Comply with the following:

1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.

3. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with submittal schedule.
4. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
6. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and final completion.

D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.

1. Phasing: Arrange list of activities on schedule by phase.
2. Work Restrictions: Show the effect of the following items on the schedule:

    a. Coordination with existing construction.
    b. Limitations of continued occupancies.
    c. Uninterruptible services.
    d. Partial occupancy before Substantial Completion.
    e. Use-of-premises restrictions.
    f. Seasonal variations.
    g. Environmental control.

3. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:

    a. Subcontract awards.
    b. Submittals.
    c. Purchases.
    d. Mockups.
    e. Fabrication.
    f. Sample testing.
    g. Deliveries.
    h. Installation.
    i. Tests and inspections.
    j. Adjusting.
    k. Curing.

l. Startup and placement into final use and operation.

E. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion.

F. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:

1. Unresolved issues.
2. Unanswered Requests for Information.
3. Rejected or unreturned submittals.
4. Notations on returned submittals.
5. Pending modifications affecting the Work and the Contract Time.

G. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate final completion percentage for each activity.

H. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, equipment required to achieve compliance, and date by which recovery will be accomplished.

I. Distribution: Distribute copies of approved schedule to Architect Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. Post copies in Project meeting rooms and temporary field offices.
2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

1.8 CPM SCHEDULE REQUIREMENTS

A. General: Prepare network diagrams using AON (activity-on-node) format.

B. Startup Network Diagram: Submit diagram within 14 days of date established for the Notice to Proceed. Outline significant construction activities for the first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

C. CPM Schedule: Prepare Contractor's Construction Schedule using a time-scaled CPM network analysis diagram for the Work.

1. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than 60 days after date established for the Notice to Proceed.

    a. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates.

2. Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.
3. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
4. Use "one workday" as the unit of time for individual activities. Indicate nonworking days and holidays incorporated into the schedule to coordinate with the Contract Time.

D. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the startup network diagram, prepare a skeleton network to identify probable critical paths.

1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:

    a. Preparation and processing of submittals.
    b. Mobilization and demobilization.
    c. Purchase of materials.
    d. Delivery.
    e. Fabrication.
    f. Utility interruptions.
    g. Installation.
    h. Work by Owner that may affect or be affected by Contractor's activities.
    i. Testing and inspection.
    j. Commissioning.
    k. Punch list and final completion.
    l. Activities occurring following final completion.

2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.
3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.

    a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.

E. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using a network fragment to demonstrate the effect of the proposed change on the overall Project schedule.

F. Initial Issue of Schedule: Prepare initial network diagram from a sorted activity list indicating straight "early start-total float." Identify critical activities. Prepare tabulated reports showing the following:

1. Contractor or subcontractor and the Work or activity.
2. Description of activity.
3. Main events of activity.
4. Immediate preceding and succeeding activities.
5. Early and late start dates.
6. Early and late finish dates.
7. Activity duration in workdays.
8. Total float or slack time.
9. Average size of workforce.
10. Dollar value of activity (coordinated with the schedule of values).

G. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:

1. Identification of activities that have changed.
2. Changes in early and late start dates.
3. Changes in early and late finish dates.
4. Changes in activity durations in workdays.
5. Changes in the critical path.
6. Changes in total float or slack time.
7. Changes in the Contract Time.

1.9 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:

1. List of subcontractors at Project site.
2. List of separate contractors at Project site.
3. Approximate count of personnel at Project site.
4. Equipment at Project site.
5. Material deliveries.
6. High and low temperatures and general weather conditions, including presence of rain or snow.
7. Testing and inspection.
8. Accidents.
9. Meetings and significant decisions.
10. Unusual events.
11. Stoppages, delays, shortages, and losses.
12. Meter readings and similar recordings.
13. Emergency procedures.
14. Orders and requests of authorities having jurisdiction.

15. Change Orders received and implemented.
16. Construction Change Directives received and implemented.
17. Services connected and disconnected.
18. Equipment or system tests and startups.
19. Partial completions and occupancies.
20. Substantial Completions authorized.

B. Material Location Reports: At monthly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site. Indicate the following categories for stored materials:

1. Material stored prior to previous report and remaining in storage.
2. Material stored prior to previous report and since removed from storage and installed.
3. Material stored following previous report and remaining in storage.

C. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

D. Unusual Event Reports: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, responses by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

1. Submit unusual event reports directly to Owner within one day(s) of an occurrence. Distribute copies of report to parties affected by the occurrence.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013200

SECTION 013300 - SUBMITTAL PROCEDURES

1. GENERAL

1.1 SUMMARY

A. This Section specifies administrative and procedural requirements for submittals required for performance of the Work
including: Submittal schedule, shop drawings, product data, samples and requests for product approvals as substitutions.

B. Related work in other sections: Refer to Division 1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not necessarily limited to: Permits, applications for payment, performance and payment bonds and insurance certificates.

1.2 DEFINITIONS

A. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.3 SUBMITTAL PROCEDURE

A. GENERAL CONTRACTOR shall review all submittals, then forward with a completed transmittal form to the Architect who shall then review.

1. General Contractor will be used for submitting submittals, as such all submittals shall be submitted in the form of a PDF file. Each product being submitted must be submitted with a separate cover sheet.
    a. Along with the PDF File, contractors will be required to submit to the Architect 1 Full Size Hard Copy of Shop Drawings for review as deemed necessary.
    b. After review of shop drawings General Contractor will be required to submit to the Architect 1 Full Size Hard Copy of the reviewed Shop Drawings.

B. Any items submitted without the required transmittal letter, statement of deviations, and information set forth below will not be considered.

1. Project title, address, Architect's project number and date.
2. Description or names of equipment, materials and items included, keyed to specification section and paragraph where applicable.
3. Locations at which materials or equipment are to be installed.
4. Name, address and telephone number of an individual to contact for additional information.
5. Statement of deviations from drawings and specifications.

C. The Architect's review of submittals is a gratuitous assistance, and does not relieve the Contractor from responsibility for errors or omissions in the submittals. This refers to dimensional or quantitative errors or omissions, or variations from Performance Standards implied by the Contract Documents. The review of submittals by the Architect will be general, and shall not be construed:

1. As permitting any departure from the Contract requirements;
2. As relieving the Contractor of the responsibility for any error in details, dimensions or otherwise that may exist in the submittal;
3. As reviewed departures from additional details or instructions previously furnished by the Architect, unless the Architect has specifically approved the variation in writing.

D. Any error or omission in submittals discovered after the submittal has been processed by the General Contractor and the Architect shall be corrected by the Contractor at no cost to the Owner, regardless of any "reviewed" stamp which might appear on the submittal.
E. The Architect or his consultant will review each submittal and acknowledge his review with an action stamp. The review status of designations used on the action stamp are defined as follows:

1. Reviewed: Signifies item represented in the submittal conforms with the design intent, complies with the intent of the Contract Documents and is reviewed for incorporation in the work. Contractor is to proceed with fabrication or procurement and related work.
2. Furnish as Corrected: Signifies item represented in the submittal conforms with the design concept, complies with the intent of the Contract Documents and is reviewed for incorporation in the work in accordance with the Architect or Consultants notations. Contractor is to proceed with the work in accordance with the Architect or Consultant's notations marked on the returned submittal or letter of transmittal. Re-submittal is not required.
3. Revise and Resubmit: Signifies item represented in the submittal appears to conform with the design concept and comply with the intent of the Contract Documents, but information is either insufficient or contains discrepancies which prevent the Architect or his Consultant from completing his review. Contractor is to resubmit revised information. Fabrication or procurement of the item and related work is not to proceed until the submittal is acceptable.
4. Rejected: Signifies item represented in the submittal does not conform with the design concept or comply with the intent of the Contract Documents and is not recommended for incorporation in the work. Contractor shall submit items responsive to the Contract Documents.

1.4 TIMING OF SUBMISSIONS

A. Contractors shall coordinate submittal preparation with performance of construction activity, and with purchasing, fabrication, delivery and other submittals and related activities. Transmit in advance of performance of related activities to avoid delay.
B. Make all submittals far enough in advance of scheduled dates of installation to provide adequate time for reviews, testing, color selections, securing necessary approvals, possible revision and re-submittal.

1. It is expected that all submittals will be submitted in a timely manner.
2. Architect shall review Contractor's submittal and shall not unreasonably delay or withhold approval. Architect's action in reviewing submittals shall be taken in accordance with the approved submittal schedule or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review.
3. The completion time of the Contract will not be extended for delays caused by tardiness of submittals.
    a. Contractor will assume full responsibility for providing materials as specified at their risk to maintain schedule.
4. Upon receipt of rejected submittals, Contractors will have seven (7) Calendar days to revise and resubmit.
5. If the General Contractor elects to conduct submittal reviews in an electronic format, the Architect will periodically (or as requested by the Contractor) send to the Contractor a copy of their submittal log showing the status of received submittals for the Contractor's use. It shall be the responsibility of the Contractor to review the Architect's logs to

determine the following: correct status of reviewed submittals, dates indicated, and to notify the Architect if submittals are missing or not shown on the Architect's logs.

1.5 PRE-CONSTRUCTION SUBMITTALS

A. Within seven (7) calendar days of the Receipt of the Contract, Contractors shall submit the following to the Architect for review by the Owner:

1. A list of Material Suppliers (including addresses, telephone numbers and person[s] in charge of this project).

B. Within seven (7) calendar days following notice to proceed, Contractors shall submit the following to the Architect for his review and the Owner's and Architect's information:

1. Anticipated monthly payment amounts.
2. Schedule for critical dates for Key Shop Drawings.

1.6 SHOP DRAWINGS

A. Submit electronic submittals as PDF electronic files. Submit six (6) copies of all shop drawing submittals (unless a different number is indicated in the specification) for initial review.

1. General Contractor to review and forward acceptable shop drawings to the Architect.
2. Architect and his Consultants will retain one copy of reviewed submittals for their records and one copy for transmittal to the Owner.
3. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
4. Contractor shall make additional copies/prints of the annotated submittal, as necessary, for distribution to coordinate the Work.
    a. Use only the annotated submittal with Architect's (or Consultant's) review stamp to make additional prints for distribution to coordinate the Work.
5. Provide a digital signature with digital certificate on electronically-submitted certificates and certifications where indicated.

B. Make all shop drawings accurately to a scale sufficiently large to show all pertinent features of the item and its method of connection to the work. Minimum requirements for drawings are as follows:

1. Floor Plans/Layout Plans shall not be less than 1/4" to 1'-0" scale, except for structural shop drawings which shall be at 1/8" to 1'-0".
2. Elevations shall not be less than ½" to 1'-0" scale.
3. Details shall not be less than 3" to 1'-0" scale. Structural details and Sections shall be drawn at a scale not less than ½" to 1'-0".
4. Contract Drawings modified and submitted as shop drawings will not be accepted.

1.7 SAMPLES

A. Unless specified otherwise, submit three (3) of each sample required to be retained by the Architect and one each to be returned to the General Contractor. Submit additional samples as required for use by the Contractor.

1. An Electronic file in PDF format with a photo of the sample included will be required to be submitted, in addition to the three (3) samples required above.

1.8 MANUFACTURER'S DATA, LISTS AND SCHEDULES

A. Submit manufacturer's descriptive and technical data including catalog sheets for materials, equipment and fixtures, showing dimensions, performance characteristics and capacities, wiring diagrams and controls, schedules and other pertinent data.

1. All required lists and schedules shall be typewritten or neatly printed.

B. All data submitted for review shall be clearly marked to specifically identify the data applicable to the Project. Marking shall be reproducible, but not obliterate data marked.

C. Submit electronic submittals as PDF electronic files. Submit all manufacturer's data, lists and schedule submittals to the General Contractor for initial review.

1. General Contractor will review and forward acceptable submittals to the Architect.
2. Architect and his Consultants will make copies of reviewed submittals for their records and one copy for transmittal to the Owner.
3. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
4. Contractor shall make additional copies/prints of the annotated submittal, as necessary, for distribution to coordinate the Work.
    a. Use only the annotated submittal with Architect's (or Consultant's) review stamp to make additional prints for distribution to coordinate the Work.
5. Provide a digital signature with digital certificate on electronically-submitted certificates and certifications where indicated.

D. In accordance with the submittal schedule, Architect shall review and/or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples, for the limited purpose of checking for conformance with the Contract Documents and applicable laws, statutes, ordinances, codes, rules and regulations. Review of such submittals is not for the purpose of determining the accuracy and completeness of other information such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems designed by the Contractor, which are the Contractor's responsibility to the extent required by the Contract Documents. Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences or procedures. Architect's review of a specific item shall not indicate approval of an assembly of which the item is a component.

END OF SECTION 013300

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.3 CONFLICTING REQUIREMENTS

A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.4 SUBMITTALS

A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

B. Schedule of Tests and Inspections: Prepare in tabular form and include the following:

1. Specification Section number and title.
2. Description of test and inspection.
3. Identification of applicable standards.
4. Identification of test and inspection methods.
5. Number of tests and inspections required.
6. Time schedule or time span for tests and inspections.
7. Entity responsible for performing tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

C. Reports: Prepare and submit certified written reports that include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, and telephone number of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.5 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

C. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.

F. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

1. Requirement for specialists shall not supersede building codes and regulations governing the Work.

G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.

1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:

1. Contractor responsibilities include the following:

a. Provide test specimens representative of proposed products and construction.
b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.

f. When testing is complete, remove test specimens, assemblies, mockups, and laboratory mockups; do not reuse products on Project.
g. As outlined in spec section 014529 Testing Laboratory Services.
h. Refer Plans for additional requirements.

2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

J. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
2. Notify Architect seven days in advance of dates and times when mockups will be constructed.
3. Demonstrate the proposed range of aesthetic effects and workmanship.
4. Obtain Architect's approval of mockups before starting work, fabrication, or construction.

a. Allow seven days for initial review and each re-review of each mockup.

5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
6. Demolish and remove mockups when directed, unless otherwise indicated.

1.6 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
2. Payment for these services will be made from testing and inspecting allowances, as authorized by Change Orders
3. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.

B. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.

1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.

a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.

2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

D. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform any duties of Contractor.
7. Perform tests as required per IBC Chapter 17, current edition, with the exception of any testing outlined in spec section 014529 testing laboratory services as provided by General Contractor.

E. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspecting equipment at Project site.

F. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

G. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Submit schedule within 30 days of date established for the Notice to Proceed.

1. Distribution: Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.7 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Owner will engage a qualified testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, and as follows:

B. Special Tests and Inspections: Conducted by a qualified testing agency as required by authorities having jurisdiction, as indicated in individual Specification Sections, and as follows:

1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
2. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
6. Retesting and reinspecting corrected work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 015000 - TEMPORARY FACILITES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. See Division 01 Section "Contract Modification Procedures" for division of responsibilities for temporary facilities and controls.

C. See Division 01 Section "Execution" for progress cleaning requirements.

1.2 USE CHARGES

A. General: Cost or use charges for temporary facilities shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Architect, Engineers, occupants of Project, testing agencies, and authorities having jurisdiction.

B. Water Service: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

C. Electric Power Service: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations, within limits of existing electrical capacity.

1.3 SUBMITTALS

A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

1.4 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.5 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Chain-Link Fencing: Minimum 2-inch (50-mm), 0.148-inch- (3.76-mm-) thick, galvanized steel, chain-link fabric fencing; minimum 6 feet (1.8 m) high with galvanized steel pipe posts; minimum 2-3/8-inch- (60-mm-) OD line posts and 2-7/8-inch- (73-mm-) OD corner and pull posts, with 1-5/8-inch- (42-mm-) OD top rails.

B. Portable Chain-Link Fencing: Minimum 2-inch (50-mm), 9-gage, galvanized steel, chain-link fabric fencing; minimum 6 feet (1.8 m) high with galvanized steel pipe posts; minimum 2-3/8-inch- (60-mm-) OD line posts and 2-7/8-inch- (73-mm-) OD corner and pull posts, with 1-5/8-inch- (42-mm-) OD top and bottom rails. Provide concrete bases for supporting posts..

C. Wood Enclosure Fence: Treated Plywood, 8 feet (2.4 m) high, framed with four 2-by-4-inch (50-by-100-mm) rails, with preservative-treated wood posts spaced not more than 8 feet (2.4 m) apart.

2.2 TEMPORARY FACILITIES

A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading (Not required).

B. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations (Not required).

2.3 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

PART 3 - EXECUTION

3.1 INSTALLATIOIN, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.
   1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Water Service: Use of Owner's existing water service facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
   1. Where installations below an outlet might be damaged by spillage or leakage, provide a drip pan of suitable size to minimize water damage. Drain accumulated water promptly from pans.

C. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

D. Electric Power Service: Use of Owner's existing electric power service will be permitted, as long as equipment is maintained in a condition acceptable to Owner.

E. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
   1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

3.3 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:
   1. Provide incombustible construction for offices, shops, and sheds located within construction area or within 30 feet (9 m) of building lines. Comply with NFPA 241.
   2. Maintain support facilities until near Substantial Completion. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

B. Traffic Controls: Comply with Owner requirements.
   1. Protect existing site improvements to remain including curbs, pavement, and utilities.
   2. Maintain access for fire-fighting equipment and access to fire hydrants.

C. Parking: Provide temporary parking areas for construction personnel, and for meetings' attendees.

D. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with Division 01 Section "Execution" for progress cleaning requirements.

E. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

B. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.

C. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

D. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.
   1. Prohibit smoking in hazardous fire-exposure and construction areas, as per new Law.
   2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
   3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
   4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.5 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.
   1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
2. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 01 Section "Closeout Procedures."

END OF SECTION 015000

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

B. Related Requirements:

1. Section 012300 "Alternates" for products selected under an alternate.
2. Section 012500 "Substitution Procedures" for requests for substitutions.

1.3 DEFINITIONS

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.4 ACTION SUBMITTALS

A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.
2. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor through Construction Manager of approval or rejection of proposed comparable product request within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

a. Form of Approval: As specified in Section 012500 "Substitution Procedures."
b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

B. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 013300 "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.

4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.

C. Storage:

1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
6. Protect stored products from damage and liquids from freezing.
7. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
3. See other Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Architect will make selection.
5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
6. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures:

1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
3. Products:

    a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
    b. Nonrestricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.

4. Manufacturers:

    a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
    b. Nonrestricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.

5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics

that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

C. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.

1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 012500 "Substitution Procedures" for proposal of product.

D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

A. Conditions for Consideration: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with these requirements:

1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

SECTION 017300 - EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:

1. Construction layout.
2. Installation of the Work.
3. Cutting and patching.
4. Progress cleaning.
5. Protection of installed construction.

B. Related Requirements:
1. Section 017700 "Closeout Procedures" for submitting Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, replacing defective work, and final cleaning.

1.3 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of subsequent work.

B. Patching: Fitting and repair work required to restore construction to original conditions after installation of subsequent work.

1.4 PREINSTALLATION MEETINGS

A. Cutting and Patching Conference: Conduct conference at Project site.

1. Prior to commencing work requiring cutting and patching, review extent of cutting and patching anticipated and examine procedures for ensuring satisfactory result from cutting and patching work. Require representatives of each entity directly concerned with cutting and patching to attend, including the following:

a. Contractor's superintendent.
b. Trade supervisor responsible for cutting operations.
c. Trade supervisor(s) responsible for patching of each type of substrate.

d. Mechanical, electrical, and utilities subcontractors' supervisors, to the extent each trade is affecting by cutting and patching operations.

2. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.5 QUALITY ASSURANCE

A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.

1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.
2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational elements include the following:

a. Primary operational systems and equipment.
b. Plumbing piping systems.
c. Control systems.
d. Communication systems.
e. Fire-detection and -alarm systems.
f. Conveying systems.
g. Electrical wiring systems.

3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:

a. Water, moisture, or vapor barriers.
b. Membranes and flashings.
c. Exterior curtain-wall construction.
d. Sprayed fire-resistive material.
e. Equipment supports.
f. Piping, ductwork, vessels, and equipment.
g. Noise- and vibration-control elements and systems.

4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

B. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

1. For projects requiring compliance with sustainable design and construction practices and procedures, use products for patching that comply with sustainable design requirements.

B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services; and other utilities.
2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

1. Description of the Work.

2. List of detrimental conditions, including substrates.
3. List of unacceptable installation tolerances.
4. Recommended corrections.

D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to local utility and Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect.

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.

3.4 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
4. Maintain minimum headroom clearance of 96 inches in occupied spaces and 90 inches in unoccupied spaces.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.

F. Tools and Equipment: Where possible, select tools or equipment that minimize production of excessive noise levels.

G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other portions of the Work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
2. Allow for building movement, including thermal expansion and contraction.
3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

J. Repair or remove and replace damaged, defective, or nonconforming Work.

1. Comply with Section 017700 "Closeout Procedures" for repairing or removing and replacing defective Work.

3.5 CUTTING AND PATCHING

A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

C. Temporary Support: Provide temporary support of work to be cut.

D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching accordingly.

F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.

G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
6. Proceed with patching after construction operations requiring cutting are complete.

H. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.

    a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
    b. Restore damaged pipe covering to its original condition.

I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.6 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

    a. Use containers intended for holding waste materials of type to be stored.

4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 017419 "Construction Waste Management and Disposal."

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.7 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.

C. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 017300

SECTION 017329 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 SUMMARY

A. Requirements and limitations for cutting and patching of Work.

B. Related Requirements:

1. Section 01 11 00 "Summary of Work".
2. Section 01 33 00 "Submittal Procedures".
3. Individual Product specification Sections:
    a. Cutting and patching incidental to work of the section.
    b. Advance notification to other sections of openings required in work of those sections.
    c. Limitations on cutting structural members.

1.2 SUBMITTALS

A. Submit written request in advance of cutting or alteration which affects:

1. Structural integrity of any element of Project.
2. Integrity of weather exposed or moisture resistant element.
3. Efficiency, maintenance, or safety of any operational element.
4. Visual qualities of sight exposed elements.
5. Work of Owner or separate contractor.

B. Include in request:

1. Identification of Project.
2. Location and description of affected Work.
3. Necessity for cutting or alteration.
4. Description of proposed Work and Products to be used.
5. Alternatives to cutting and patching.
6. Effect on work of Owner or separate contractor.
7. Written permission of affected separate contractor.
8. Date and time work will be executed.

PART 2 - (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine existing conditions prior to commencing Work, including elements subject to damage or movement during cutting and patching.

B. After uncovering existing Work, access conditions affecting performance of work.

C. Beginning of cutting or patching means acceptance of existing conditions.

3.2 PREPARATION

A. Provide temporary supports to ensure structural integrity of the Work. Provide devices and methods to protect other portions of Project from damage.

B. Provide protection from elements for areas which may be exposed by uncovering work.

C. Maintain excavations free of water.

3.3 CUTTING

A. Execute cutting and fitting to complete the Work.

B. Uncover work to install improperly sequenced work.

C. Remove and replace defective or non-conforming work.

D. Remove samples of installed work for testing when required.

END OF SECTION 017329

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT & DISPOSAL

1. GENERAL

The work of this section consists of the periodic removal of construction debris from the job site and associated public streets, roads, easements and rights-of-way used during construction. In addition, the final detailed cleaning of the site and building prior to Owner acceptance of the project is included.

2. MATERIALS: None

3. EXECUTION

3.1 General: The Contractor shall keep the construction site sufficiently clean so as to allow a safe and expeditious construction operation to be implemented. Periodically and upon completion of the work and before acceptance and final payment is made, the Contractor shall clean and remove from the road rights-of-way, easements, public and private property, adjacent property, all surplus, discarded materials, perishable matter, rubbish and temporary structures. Contractor shall restore in an acceptable manner all property, both public and private, which may have been damaged on account of the prosecution of the work and shall leave the roadway, easements, public and private property neat and presentable. The building shall be thoroughly cleaned and conditioned for the Owner to occupy.

3.2 Open Burning: During construction of the project, efforts shall be taken to prohibit the open burning of refuse.

3.3 Dust Control: Excavation and operations may require control measures to prevent the creation of excessive dust.

3.4 Water Pollution Control: The Contractor shall exercise caution to guard against the degradation of the waters of the State due to construction related pollutants (silt, debris, and petroleum products), and raw untreated sewage.

END OF SECTION 017419

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for Contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures.
2. Final completion procedures.
3. Warranties.
4. Final cleaning.

B. Related Requirements:
1. Section 017839 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.

1.3 DEFINITIONS

A. List of Incomplete Items: Contractor-prepared list of items to be completed or corrected, prepared for the Architect's use prior to Architect's inspection, to determine if the Work is substantially complete.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of cleaning agent.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.5 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

C. Field Report: For pest-control inspection.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items required by other Sections.

1.7 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's "punch list"), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction, permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
2. Submit closeout submittals specified in other Division 01 Sections, including Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Owner. Label with manufacturer's name and model number.

    a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Owner's signature for receipt of submittals.
5. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Advise Owner of pending insurance changeover requirements.
2. Instruct Owner's personnel in maintenance of products.
3. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
4. Complete final cleaning requirements.
5. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of

unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

1.8 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining Final Completion, complete the following:

1. Submit a final Application for Payment.
2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit Final Completion photographic documentation.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.9 LIST OF INCOMPLETE ITEMS

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor, listed by room or space number.
2. Organize items applying to each space by major element, including categories for ceilings, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:

    a. Project name.
    b. Date.
    c. Name of Architect.
    d. Name of Contractor.

e. Page number.

4. Submit list of incomplete items in the following format:

a. MS Excel Electronic File: Architect will return annotated file.
b. Web-Based Project Software Upload: Utilize software feature for creating and updating list of incomplete items (punch list).

1.10 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.

D. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

E. Warranties in Paper Form:

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (215-by-280-mm) paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

F. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:

a. Clean Project site of rubbish, waste material, litter, and other foreign substances.
b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
c. Rake grounds that are not planted, mulched, or paved to a smooth, even-textured surface.
d. Remove tools, construction equipment, machinery, and surplus material from Project site.
e. Remove snow and ice to provide safe access to building.
f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
g. Remove debris and surface dust from limited-access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
h. Clean flooring, removing debris, dirt, and staining; clean according to manufacturer's recommendations.
i. Vacuum and mop concrete.
j. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
k. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
l. Remove labels that are not permanent.
m. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
n. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
o. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.

p. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
q. Clean luminaires, lamps, globes, and reflectors to function with full efficiency.
r. Clean strainers.
s. Leave Project clean and ready for occupancy.

C. Construction Waste Disposal: Comply with waste-disposal requirements in Section 017419 "Construction Waste Management and Disposal."

3.2 REPAIR OF THE WORK

A. Complete repair and restoration operations required by Section 017300 "Execution" before requesting inspection for determination of Substantial Completion.

END OF SECTION 017700

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for project record documents, including the following:

1. Record Drawings.
2. Record Specifications.
3. Record Product Data.
4. Miscellaneous record submittals.

B. Related Requirements:
1. Section 017700 "Closeout Procedures" for general closeout procedures.

1.3 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:

1. Number of Copies: Submit one set(s) of marked-up record prints.
2. Number of Copies: Submit copies of record Drawings as follows:

a. Initial Submittal:

1) Submit PDF electronic files of scanned record prints and one of file prints.
2) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.

b. Final Submittal:

1) Submit PDF electronic files of scanned record prints and two set(s) of prints.
2) Print each drawing, whether or not changes and additional information were recorded.

B. Record Specifications: Submit one paper and annotated PDF electronic files of Project's Specifications, including addenda and contract modifications.

C. Record Product Data: Submit one paper and annotated PDF electronic files and directories of each submittal.

1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.

D. Reports: Submit written report weekly indicating items incorporated into project record documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.

1.4 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

    a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    b. Accurately record information in an acceptable drawing technique.
    c. Record data as soon as possible after obtaining it.
    d. Record and check the markup before enclosing concealed installations.
    e. Cross-reference record prints to corresponding photographic documentation.

2. Content: Types of items requiring marking include, but are not limited to, the following:

    a. Dimensional changes to Drawings.
    b. Revisions to details shown on Drawings.
    c. Revisions to routing of piping and conduits.
    d. Revisions to electrical circuitry.
    e. Actual equipment locations.
    f. Locations of concealed internal utilities.
    g. Changes made by Change Order or Construction Change Directive.
    h. Changes made following Architect's written orders.
    i. Details not on the original Contract Drawings.
    j. Field records for variable and concealed conditions.
    k. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Format: Annotated PDF electronic file.
3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
4. Identification: As follows:

    a. Project name.
    b. Date.
    c. Designation "PROJECT RECORD DRAWINGS."
    d. Name of Architect and General Contractor.
    e. Name of Contractor(s).

1.5 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
5. Note related Change Orders, record Product Data, and record Drawings where applicable.

B. Format: Submit record Specifications as annotated PDF electronic file.

1.6 RECORD PRODUCT DATA

A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.

B. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, record Specifications, and record Drawings where applicable.

C. Format: Submit record Product Data as annotated PDF electronic file.

1. Include record Product Data directory organized by Specification Section number and title, electronically linked to each item of record Product Data.

1.7 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

B. Format: Submit miscellaneous record submittals as PDF electronic file scanned PDF electronic file(s) of marked-up miscellaneous record submittals.

1.8 MAINTENANCE OF RECORD DOCUMENTS

A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.

B. Maintenance of Record Documents: Store record documents in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's reference during normal working hours.

PART 2 - PRODUCTS

PART 3 - EXECUTION

END OF SECTION 017839

SECTION 017900 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:

1. Instruction in operation and maintenance of systems, subsystems, and equipment.

1.3 INFORMATIONAL SUBMITTALS

A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.

B. Qualification Data: For instructor.

C. Attendance Record: For each training module, submit list of participants and length of instruction time.

D. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

1.4 CLOSEOUT SUBMITTALS

A. Demonstration and Training Manuals: Submit two copies within seven days of end of each training module.

1. At completion of training, submit complete training manual(s) for Owner's use prepared in PDF file format.

1.5 QUALITY ASSURANCE

A. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Section 014000 "Quality Requirements," experienced in operation and maintenance procedures and training.

B. Pre-construction Conference: Conduct conference at Project site. Review methods and procedures related to demonstration and training including, but not limited to, the following:

1. Inspect and discuss locations and other facilities required for instruction.
2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
3. Review required content of instruction.
4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.6 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data have been reviewed and approved by Architect.

1.7 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.

B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:

a. System, subsystem, and equipment descriptions.
b. Performance and design criteria if Contractor is delegated design responsibility.
c. Operating standards.
d. Regulatory requirements.
e. Equipment function.
f. Operating characteristics.
g. Limiting conditions.
h. Performance curves.

2. Documentation: Review the following items in detail:

a. Emergency manuals.
b. Systems and equipment operation manuals.
c. Systems and equipment maintenance manuals.

d. Product maintenance manuals.
e. Project Record Documents.
f. Identification systems.
g. Warranties and bonds.
h. Maintenance service agreements and similar continuing commitments.

3. Emergencies: Include the following, as applicable:

a. Instructions on meaning of warnings, trouble indications, and error messages.
b. Instructions on stopping.
c. Shutdown instructions for each type of emergency.
d. Operating instructions for conditions outside of normal operating limits.
e. Sequences for electric or electronic systems.
f. Special operating instructions and procedures.

4. Operations: Include the following, as applicable:

a. Startup procedures.
b. Equipment or system break-in procedures.
c. Routine and normal operating instructions.
d. Regulation and control procedures.
e. Control sequences.
f. Safety procedures.
g. Instructions on stopping.
h. Normal shutdown instructions.
i. Operating procedures for emergencies.
j. Operating procedures for system, subsystem, or equipment failure.
k. Seasonal and weekend operating instructions.
l. Required sequences for electric or electronic systems.
m. Special operating instructions and procedures.

5. Adjustments: Include the following:

a. Alignments.
b. Checking adjustments.
c. Noise and vibration adjustments.
d. Economy and efficiency adjustments.

6. Troubleshooting: Include the following:

a. Diagnostic instructions.
b. Test and inspection procedures.

7. Maintenance: Include the following:

a. Inspection procedures.
b. Types of cleaning agents to be used and methods of cleaning.
c. List of cleaning agents and methods of cleaning detrimental to product.
d. Procedures for routine cleaning.
e. Procedures for preventive maintenance.
f. Procedures for routine maintenance.

g. Instruction on use of special tools.

8. Repairs: Include the following:

a. Diagnosis instructions.
b. Repair instructions.
c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
d. Instructions for identifying parts and components.
e. Review of spare parts needed for operation and maintenance.

1.8 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual.

B. Set up instructional equipment at instruction location.

1.9 INSTRUCTION

A. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

1. Contractor will furnish an instructor to describe basis of system design, operational requirements, criteria, and regulatory requirements.
2. Owner will furnish an instructor to describe Owner's operational philosophy.
3. Owner will furnish Contractor with names and positions of participants.

B. Scheduling: Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.

1. Schedule training with Owner with at least seven days' advance notice.

C. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.

D. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of a demonstration performance-based test.

E. Cleanup: Collect used and leftover educational materials and remove from Project site. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

END OF SECTION 017900

SECTION 033543 – POLISHED CONCRETE FLOOR FINISHES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Grinding and Polishing of interior concrete slab.
   2. Application of reactive surface densifier & stains (STC-1 & STC-2)
   3. Application of stain guard surface treatment.
   4. Progressive polishing of slab surface.

B. Related Sections:
   1. Section 007200 – General Conditions

C. Furnish all labor, materials, equipment and services for the Work of this Section.

1.2 SUBMITTALS

A. Section 00 72 00 – General Conditions

B. Product data for: (Must Accompany Bid)
   1. Manufacturer and model of equipment to be used, including all types of grinding heads (diamonds) and dust extraction system.
   2. Concrete liquid reactive surface densifying system including stain guard treatment.

C. Contractor Qualifications:
   1. All Polished Concrete Contractors MUST be pre-approved by the architect prior to bid date.
      a. Provide list of a minimum of 10 projects performed within last three years of similar type, size, and complexity. Submit project names, addresses, contacts, and phone
      numbers for each project. (it is important to follow up)
      b. Submit letter of certification from manufacturers of all products and equipment specified herein, stating that the applicator is a certified applicator of the system and is familiar with proper procedures and installation methods as required by the manufacturer.
      c. Polished concrete contractor must have been regularly performing Polished Concrete work for at least 3 years prior to bid with manufacturer certifications or job history verifying this point.

D. Maintenance Data: Submit 5 sets of maintenance data as follows:
   1. Manufacturer’s technical product data and literature.
   2. Storage and handling requirements and recommendations.
   3. Methods of maintaining polished concrete, including a listing of approved cleaning and stain removal products and procedures.
   4. Manufacturer’s recommended maintenance schedule.
   5. Precautions for cleaning materials and methods that could be detrimental to polished concrete.
   6. Manufacturer’s safety data sheets and related requirements.

1.3 QUALITY ASSURANCE

A. Regulatory Requirements:
   1. Accessibility Requirements: Comply with applicable requirements of the Americans with Disabilities Act Accessibility Guidelines (ADAAGs) for Buildings and Facilities; Final Guidelines, revisions, and updates for static coefficient of friction for walkway surfaces.
   2. Environmental Requirements: Comply with current Federal and local toxicity and

air quality regulations and with Federal requirements on content of lead, mercury, and other heavy metals. Do not use solvents in floor polish products that contribute to air pollution.

B. Mock Up: Prior to commencement of work, prepare mock up for evaluation of surface preparation techniques and application workmanship.
   1. Designate 100 square feet for mock up of system specified, using same materials, tools, equipment, and procedures intended for actual surface preparation at location determined by the General Contractor. Include properly prepared slab joints. Include slab edges adjoining existing partitions/walls.
   2. Notify Architect a minimum 7 days prior to date and time when mockups will be performed and completed.
   3. Demonstrate proposed range of aesthetic effects and workmanship.
   4. Obtain approval of mockups before proceeding with work.
   5. Maintain mockups during construction in undisturbed condition as a standard for judging completed work. Approved mockups may become part of the completed work if acceptable.

C. Pre-Installation Meeting:
   1. Schedule meeting a minimum of one day prior to first polishing of existing concrete slab and one week prior to placement of new slabs.
   2. Notify all required attendees in writing of scheduled time and meeting location at least two weeks in advance. Include copy of agenda.
   3. Require attendance of all entities directly affecting work, including, but not limited to the following. Attendees shall include all personnel directly involved in overseeing and who have authority to control the work.
      a. General Contractor
         1) Project Manager
         2) Superintendent
      b. Concrete Polishing Subcontractor
         1) Project Manager
         2) Foreman
      ~~c. Concrete Finisher~~
         ~~1) Project Manager~~
         ~~2) Foreman~~
      d. Architect
   4. Review the following:
      a. Environmental requirements.
         1) Installation of controls to limit damage from excessive dust caused by resilient floor tile removal, surface preparation and final polishing.
         2) Installation of controls to limit damage from moisture.
         3) Compliance with manufacturers' written instructions for substrate temperature and moisture content, ambient temperature, and humidity, ventilation and other conditions affecting product performance.
         4) Area shall be closed to traffic during floor finish application and after application, for a time as recommended by finish manufacturer(s).
      b. Scheduling and phasing of work.
      c. Coordination with other work and personnel.
      d. Protection of adjacent surfaces.
      e. Surface preparation.
      f. Repair of slab defects and defective work including cost responsibility.
      g. Application of liquid densifier.
      h. Application of protective surface treatment.
      i. Final cleaning/staining/finishing/polishing.

j. Field quality control methods.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to site in original, factory sealed, unopened, new containers (drums) bearing manufacturer's name and label intact and legible, with the following information:
   1. Name or title of material.
   2. Manufacturer's standard container (drum) numbers.
   3. Application instructions.

B. Dispense penetrating liquid densifier only from factory sealed and numbered containers (drums).

C. Maintain record of container (drum) numbers received and used during floor treatment.

D. Storage:
   1. Store materials in protected and well-ventilated area at temperatures between 40 and 90 degrees F unless otherwise required by manufacturer.
   2. Keep containers sealed until ready for use.
   3. Do not use materials beyond manufacturer's shelf life limits.

E. Handling: Protect materials during handling and application to prevent damage or contamination.

1.5 ENVIRONMENTAL REQUIREMENTS

A. Limit and control damage from excessive dust caused by surface preparation and polishing.

B. Limit and control damage from moisture.

C. Comply with manufacturer's written instructions for substrate temperature and moisture content, ambient temperature and humidity, ventilation and other conditions affecting product performance.

D. All replaced concrete shall be cured a minimum of 28 days or until such point equipment can be put on slab without displacing aggregate.

1.6 SEQUENCING AND SCHEDULING

A. Comply with approved schedule for sequence of operations for grinding and polishing operations.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with project requirements, provide products and equipment by the following, or approved equal:
   1. Concrete Polishing Solutions (877) 472-8200 www.go2cps.com
   2. Convergent Concrete Technologies (866) 375-2280 www.convergentconcrete.com
   3. HTC (877) 482-8700 www.htc-america.com
   4. Advanced Floor Products (801) 812-3420 www.retroplatesystem.com
   5. American Decorative Concrete Supply (479) 725-0033 www.ameripolish.com
   6. Prosoco (800) 255-4255 www.prosoco.com
   7. Pullman-Ermator (800) 232-2635 www.pullman-ermator.com
   8. VMC Technical Assistance Corp (800) 460-4862 www.vmctac.com

2.2 EQUIPMENT

A. Contractor to furnish minimum three grinding/polishing machines (HTC 800, CPS 320 or similar) in full operating condition during the duration of work.
   1. Planetary, counter rotating variable speed floor grinder (3 or 4 head).
   2. Minimum 700 pounds of downward pressure.

B. Dust extraction system, pre-separator, and squeegee attachments with minimum flow rating of 322 cubic feet per minute.
C. Generators are required to provide power. The Polished Concrete Contractor is to provide a minimum of two, each capable of running two classic (HTC 800 or similar) grinding machines concurrently to expedite work.
D. Allowable Grinding Heads:
   1. Metal Bonded Diamonds:
      a. Grit Size: 40, 80, or 150.
      b. Use of metal bonded diamonds shall be for removal of existing epoxy coating only, unless approved in writing prior to alternate use.
   2. Resin Bonded, Phenolic Diamonds
      a. Grit Size: Raptor L-1, Raptor L-2, 100, 200, 400, or 800.
   3. Grinding/Polishing Pads for Edges:
      a. Grit Size: 60, 100, 120, 200, 400, 800, 1500, and 3000.
E. Hand grinder with dust extraction attachment and pads.
F. High speed propane burnisher:
   1. Minimum 27 inch head generating pad speeds of 1,500 RPM or higher, as verified with tachometer.
G. Diamond Impregnated Pads
   1. Twister Diamond Cleaning System Pads, by HTC.
   2. Diamond Polishing Pads, by Norton.
   3. SpinFlex Diamond Polishing Pads, by CPS.
H. Applicator pad:
   1. Professional Mighty Mop 077, by Quickie.
   2. 24" Microfiber Wet Room Pad, by Rubbermaid.

2.3 PRODUCTS
A. Joint Filler
   1. Polyurea joint filler as recommended by supplier/installer as specified.
B. Penetrating Hardener/Densifier: Clear liquid reactive lithium-silicate based.
   1. Retroplate 99 by Advanced Floor Products.
   2. Consolideck LS, by Prosoco.
   3. Approved equal by other manufacturer.
C. Protective Surface Treatment (Stain Guard):
   1. RetroGaurd 99 by Advanced Floor Products.
   2. Consolideck LS Guard, by Prosoco.
   3. Approved equal by other manufacturer.
D. Concrete Colorant (STC-1 & STC-2):
   1. Ameripolish Solvent Based Dye or Approved System Equal.
      a. Colors as selected by the Architect.

PART 3 - EXECUTION

3.1 EXAMINATION
A. Examine slab in the presence of the certified applicator, identifying all defects. Correct conditions detrimental to timely and proper work.
B. Do not proceed until unsatisfactory conditions are corrected as noted below.

3.2 SLAB PREPARATION
A. Close areas to traffic during and after floor finish application for time period recommended by product manufacturer(s).

B. Clean Substrate: Removal of surface contaminants to ensure penetration of reactive surface densifier. No hazardous, flammable, toxic or solvent based cleaning materials are permitted.
   1. Remove dust and loose material by brushing, sweeping, and vacuuming.
   2. Remove curing, sealing and coating agents, oil, breaking compound residue, wax, and grease by mechanically scraping off heavy deposits. Remove remaining residues using Wax and Curing Compound Remover.
   3. Remove deep-set oil and grease stains.
   4. Remove paint residue.
   5. Remove grease and general soiling with cleaner/degreaser diluted as recommended by manufacturer in an auto scrubber.
   6. Remove mildew by scrubbing with solution of trisodium phosphate and bleach. Rinse with clean water.
   7. Thoroughly rinse floor surface to remove soap residue and contaminants.
   8. Squeegee dry.

C. Fill slab joints with rigid, grindable which accepts color. Approved manufacturers include Versa Flex and Metzer-McGuire.

D. Repair all slab defects.

E. Ensure surfaces are clean, dry, and free of oil, grease, dirt, dust, and contaminants.

F. Protect surrounding and adjacent surfaces in accordance with floor finish manufacturer's written recommendations. Do not apply tape to the floor. If floor is damaged by tape installation or removal, repair damage.

G. Grind slab surface with 40, 80 or 150-grit metal-bonded diamond grinding heads to achieve the sand aggregate finish required by the architect.

H. Progressively polish slab surface with 100 or 200-grit resin-bonded, phenolic diamond heads. Clean slab with wet auto scrubber between polishing passes.

I. Polish slab with 400 grit resin-bonded, phenolic diamond heads.

J. Apply dye per plan layout and per manufacturer's instructions.

K. Clean dye residue per manufacturer's instructions.

L. Apply reactive surface densifier per manufacturer's instructions.

M. Polish slab with 800 and 1500 grit resin-bonded, phenolic diamond heads.

N. Apply protective surface treatment per manufacturer's instructions. Draw out material to thin film with applicator pad.

O. Slowly burnish slab with 400, 800 or 1,500 grit diamond impregnated pad.
   1. Burnisher, pad and pace of forward movement shall combine to develop a minimum floor surface temperature of 91º F directly below the burnishing pad, as measured by the operator during installation.

P. Progressive edge grinding will be necessary along all vertical abutments.

3.3 FINISH REQUIREMENTS:

A. Gloss: Final surface gloss shall be a Specified Overall Gloss Value (SOGV) of not less than 45 and Minimum Local Gloss Value (MLGV) of 30 as measured using a Horiba IG-320 Gloss Checker.

B. Slip Resistance: Measured static coefficient of friction (SCOF) shall be not less than 0.50 as measured in accordance with ASTM C 1028 and as required to meet latest CODES governing "slip resistance" standards.

C. Leave work complete and ready for final inspection by Architect.

3.4 PROTECTION

A. General Contractor shall protect areas to receive polished concrete finish at all times during construction to prevent oils, dirt, metal, excessive water, paint and other potentially damaging materials from affecting the finished concrete surface. Protective measures listed

below shall begin immediately after completion of and polishing.

1. Inform all subcontractors and trades that slab must be protected at all times.
2. Protect slab surface from moisture for 72 hours to prevent re-emulsification of surface treatment prior to cure.
3. Diaper all hydraulic equipment to avoid staining.
4. Allow no pipe cutting machines on the finished slab.
5. Do not place wood pallets directly on slab surface for 72 hours. Use face down carpet to separate moisture in wood from contact with concrete surface.
6. Do not place steel on the finished slab to avoid rust staining.
7. Prevent contact with acids and acidic detergents.
8. Require use of drop cloths during all painting. Immediately wipe clean spilled paint.

END OF SECTION 033543

SECTION 061053 - ROUGH CARPENTRY

1. GENERAL

1.1 Furnish and install complete all rough carpentry work shown on the drawings or herein specified, including:

1.1.1 Grounds - Permanent, where required, for paneling, casework, etc.

1.1.2 Rough Hardware - Nails, spikes, bolts, nuts, washers, screws, connectors, etc., as required for assembling and securing work in this Section.

1.1.3 In General - Temporary enclosures, scaffolding, ladders, guards, batterboards, rough bucks, studding, furring, blocking, and all other items of this nature necessary to complete this work. All such items shall be carefully and substantially constructed in accordance with all local, state, and federal laws and regulations.

1.2 Dismantle and remove all temporary items when they are no longer needed.

2. TEMPORARY PROTECTION: Provide, install, and maintain such temporary coverings as are necessary to protect the work and materials from damage during construction operations. All finished openings, and openings where finished frames are set but not completed, shall be protected by setting temporary wood frames within the openings.

3. TEMPORARY GUARDS AND BARRICADES: Provide, install, and maintain all temporary guards, and barricades, necessary for the protection of the public and workmen, and as may be required by local, state, or federal laws and regulations.

4. BLOCKING

4.1 Provide and install all blocking and furring, plates, stripping, plugs, etc., required for the securing of finish work to the rough work. Provide blocking cut in between studs or joists where joints in the facing material occur.

5. FRAMING AND MISCELLANEOUS BLOCKING

5.1 Moisture content shall be a maximum of nineteen (19) percent.

5.2 Lumber shall conform to the American Softwood Lumber Standard PS 20-70 and with specific grading requirements of the organization recognized as covering the species used and under whose grading rules the lumber is produced. Each piece of framing, lumber and each board shall be identified by the grade mark of a recognized organization or independent inspection agency. Such organization or agency shall be certified by the Board of Review, American Lumber Standards Committee, Washington, D. C., to grade the species.

5.3 Lumber for framing shall be S4S, Select, Douglas Fir, or Southern Pine or better. Roof, walls and studs shall be No. 2 or better grade, Douglas Fir, Southern Pine, SPF or better. Treated lumber in moist locations.

6. PLYWOOD

5.1 Interior Wall Sheathing: APA rated Exposure 1 or Exterior.

5.2 Exterior Wall Sheathing: APA rated Exposure.

LUMBER / PLYWOOD SPECIFICATIONS

STRUCTURAL. MEMBER	*Fb*	*E*	*MINIMUM REQUIREMENTS*
FRAMING/BLOCKING	1.1K	1,200,000	NO. 2 DOUGLAS FIR SOUTHERN PINE OR BETTER
WALL BLOCKING			FRAMING STUD GRADE
ROOF BLOCKING			NO. 2 COMMON OR BETTER (TREATED)
PLYWOOD			CD-X PLYWOOD

END OF SECTION 061053

SECTION 064023 - INTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Plastic-laminate cabinets

2. Plastic-laminate countertops

B. Related Requirements:
1. Section 061053 "Miscellaneous Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing interior architectural woodwork that are concealed within other construction before interior architectural woodwork installation.

1.3 SUBMITTALS

A. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.
1. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
2. Show locations and sizes of cutouts and holes for plumbing fixtures, faucets, and other items installed in architectural woodwork.

B. Samples for Initial Selection:
1. Plastic Laminates

C. Qualification Data: For Fabricator

1.4 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

B. Quality Standard: Unless otherwise indicated, comply with AWI's "Architectural Woodwork Quality Standards" for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver woodwork until painting and similar operations that could damage woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in “Project Conditions” Article.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.
   1. Maintain temperature between: 60 and 90 deg F
   2. Maintain relative humidity between: 25 and 55 percent

B. Field Measurements: Where woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
   1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed, and indicate measurements on Shop Drawings.
   2. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating woodwork without field measurements. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.7 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide materials that comply with requirements of AWI’s quality standard for each type of woodwork and quality grade specified, unless otherwise indicated.

B. Laminates: Refer PLANS and 090000 “Finishes” for laminate selection and locations (PL-1)

2.2 CABINET HARDWARE AND ACCESSORIES

A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets, except for items specified in Division 08 Section “Door Hardware”.

B. Frameless Concealed Hinges (European Type): BHMA A156.9, B01602, 100 degrees of opening.

C. Pulls: As noted per Details.

D. Catches: Magnetic catches, BHMA A156.9, B03141.

E. Adjustable Shelf Standards and Supports: BHMA A156.9, B04071; with shelf rests, B04081.

F. Shelf Rests: BHMA A156.9, B04013; metal.

G. Drawer Slides: BHMA A156.9, B05091.
   1. Heavy Duty (Grade 1HD-100 and Grade 1HD-200): Side mounted; full-extension type; zinc-plated steel ball-bearing slides.

H. Door Locks: BHMA A156.11, E07121 (All cabinets to be locking. Verify keying with Owner)

I. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated.
   1. Finish: Black.

J. Concealed Hardware Finishes: Provide manufacturer's standard finish that complies with product class requirements in BHMA A156.9.

K. Miscellaneous Hardware: Refer cabinet elevations and details in the Drawings for specified miscellaneous hardware.

2.3 MISCELLANEOUS MATERIALS

A. Furring, Blocking, Shims, and Hanging Strips: Fire-retardant-treated softwood lumber, kiln dried to less than 15 percent moisture content.

B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous-metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.

C. Adhesives, General: Do not use adhesives that contain urea formaldehyde.

D. VOC Limits for Installation of Adhesives and Glues: Use installation adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
   1. Wood Glues: 60 g/L.
   2. Contact Adhesive: 250 g/L.

E. Adhesive for Bonding Plastic Laminate: Unpigmented contact cement.
   1. Adhesive for Bonding Edges: Hot-melt adhesive or adhesive specified above for faces.

2.4 FABRICATION, GENERAL

A. Interior Woodwork Grade: Unless otherwise indicated, provide premium-grade interior woodwork complying with referenced quality standard.

B. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to ambient relative humidity during fabrication and in installation areas.

C. Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:
   1. Corners of Cabinets and Edges of Solid-Wood (Lumber) Members 3/4 Inch Thick or Less: 1/16 inch.
   2. Edges of Rails and Similar Members More than 3/4 Inch Thick: 1/8 inch.
   3. Corners of Cabinets and Edges of Solid-Wood (Lumber) Members and Rails: 1/16 inch.

D. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
   1. Notify Architect seven days in advance of the dates and times woodwork fabrication will be complete.
   2. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements indicated on Shop Drawings before disassembling for shipment.

E. Shop-cut openings to maximum extent possible to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edged of sutouts to remove splinters and burrs.
   1. Seal edges of openings in countertops with a coat of varnish.

2.5 PLASTIC-LAMINATE CABINETS

A. Grade: Premium

B. AWI Type of Cabinet Construction: Flush overlay.

C. Reveal Dimension: 1/2 inch.

D. Laminate Cladding for Exposed Surfaces: High-pressure decorative laminate complying with the following requirements:
   1. Horizontal Surfaces Other than the Tops: Grade HGS.
   2. Vertical Surfaces: Grade VGS.
   3. Edges: Grade HGS

E. Materials for Semi-Exposed Surfaces:
   1. Surfaces Other Than Drawer Bodies: Thermoset decorative panels.

a. Edges of Plastic Laminate Shelves: PVC tape, 0.018-inch minimum thickness, matching laminate in color, pattern, and finish.
b. For semi-exposed backs of panels with exposed plastic-laminate surfaces, provide surface of high-pressure decorative laminate, Grade VGS.

2. Drawer Sides and Backs: Thermoset decorative panels.
3. Drawer Bottoms: Thermoset decorative panels.

F. Concealed Backs of Panels with Exposed Plastic Laminate Surfaces: High-pressure decorative laminate, Grade BKL.

G. Colors, Patterns and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
1. Refer PLANS and 090000 “Finishes” for requirements.

H. Provide dust panels of 1/4-inch plywood or tempered hardboard above compartments and drawers, unless located directly under tops.

2.6 PLASTIC-LAMINATE COUNTERTOPS

A. Grade: Premium
B. High-Pressure Decorative Laminate Grade: HGS.
C. Edge Treatment: PVC
D. Core Material: Particleboard or medium-density fiberboard.
E. Core Material at Sinks: Medium-density fiberboard made with exterior glue.
F. Backer Sheet: Provide plastic-laminate backer sheet, Grade BKL, on underside of countertop substrate.

PART 3 - EXECUTION

3.1 PREPARATION

A. Before installation, condition woodwork to average prevailing humidity conditions in installation areas.
B. Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

3.2 INSTALLATION

A. Grade: Install woodwork to comply with requirements for the same grade specified in Part 2 for fabrication of type of woodwork involved.

B. Assemble woodwork and complete fabrication at Project site to comply with requirements for fabrication in Part 2, to extent that it was not completer in the shop.

C. Install woodwork level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb (including tops) to a tolerance of 1/8 inch in 96 inches.

D. Scribe and cut woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

E. Fire-Retardant-Treated Wood: Handle, store, and install fire-retardant-treated wood to comply with chemical treatment manufacturer's written instructions, including those for adhesives used to install woodwork.

F. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork and matching final finish is transparent finish is indicated.

G. Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
1. Install cabinets with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
2. Maintain veneer sequence matching of cabinets with transparent finish.
3. Fasten wall cabinets through back, near top and bottom, at ends and note more than 16" o.c. with No. 10 wafer-head sheet metal screws through metal backing or metal framing behind wall finish.

H. Countertops: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.
1. Align adjacent solid-surfacing-material countertops and form seams to comply with manufacturer's written recommendations using adhesive in color to match countertop. Carefully dress joints smooth, remove surface scratches, and clean entire surface.
2. Install countertops with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
3. Secure backsplashes to tops with conceales metal brackets at 16 inches o.c. and to walls with adhesive.
4. Caulk space between backsplash and wall with sealant specified in Division 07 "Joint Sealants".

3.3 ADJUSTING AND CLEANING

A. Repair damaged and defective woodwork, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.

B. Clean, lubricate, and adjust hardware.

C. Clean woodwork on exposed and semiexposed surfaces, Touch up shop-applied finishes to restore damaged or soiled areas.

END OF SECTION 064023

SECTION 066510 - SOLID SURFACE FABRICATION

PART 1 — GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the contract, including general and supplementary conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following horizontal and trim solid surface product types:

1. Countertops
2. As shown in PLANS

B. Related Sections include the following:

1. 061053 “Misc Rough Carpentry” for Blocking.

1.3 DEFINITION

A. Solid surface is defined as nonporous, homogeneous material maintaining the same composition throughout the part with a composition of acrylic polymer, aluminum trihydrate filler and pigment.

1.4 SUBMITTALS

A. Product data:

1. For each type of product indicated.

B. Shop drawings:

1. Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices and other components.
    a. Show full-size details, edge details, thermoforming requirements, attachments, etc.
    b. Show locations and sizes of furring, blocking, including concealed blocking and reinforcement specified in other Sections.
    c. Show locations and sizes of cutouts and holes for items to be installed in solid surface.

C. Samples:

1. For each type of product indicated.
    a. Submit minimum 6-inch by 6-inch sample in specified gloss.
    b. Cut sample and seam together for representation of inconspicuous seam.
    c. Indicate full range of color and pattern variation.
2. Approved samples will be retained as a standard for work.

D. Product data:

1. Indicate product description, fabrication information and compliance with specified performance requirements.

E. Product certificates:

1. For each type of product, signed by product manufacturer.

F. Fabricator/installer qualifications:
    1. Provide copy of certification number.

G. Maintenance data:
    1. Submit manufacturer's care and maintenance data, including repair and cleaning instructions.
        a. Maintenance kit for finishes shall be submitted.
    2. Include in project closeout documents.

1.5 QUALITY ASSURANCE

A. Qualifications:
    1. Shop that employs skilled workers who custom fabricate products similar to those required for this project and whose products have a record of successful in-service performance.

B. Fabricator/installer qualifications:
    1. Work of this section shall be by a certified fabricator/installer, certified in writing by the manufacturer.

C. Applicable standards:
    1. Standards of the following, as referenced herein:
        a. American National Standards Institute (ANSI)
        b. American Society for Testing and Materials (ASTM)
        c. National Electrical Manufacturers Association (NEMA)
        d. NSF International
    2. Fire test response characteristics:
        a. Provide with the following Class A (Class I) surface burning characteristics as determined by testing identical products per UL 723 (ASTM E84) or another testing and inspecting agency acceptable to authorities having jurisdiction:
            1) Flame Spread Index: 25 or less.
            2) Smoke Developed Index: 450 or less.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver no components to project site until areas are ready for installation.
B. Store components indoors prior to installation.
C. Handle materials to prevent damage to finished surfaces.
    1. Provide protective coverings to prevent physical damage or staining following installation for duration of project.

1.7 WARRANTY

A. Provide manufacturer's warranty against defects in materials.
    1. Warranty shall provide material and labor to repair or replace defective materials.
    2. Damage caused by physical or chemical abuse or damage from excessive heat will not be warranted.

B. Manufacturer's warranty period:
    1. Ten years from date of substantial completion.

1.8 MAINTENANCE

A. Provide maintenance requirements as specified by the manufacturer.

PART 2 — PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Basis of Design as outlined in 090000 - Finishes
   1. Subject to compliance with requirements, provide products by one of the following:
      a. Formica
      b. WilsonArt
      c. Corian
      b. Pre-approved equal

2.2 MATERIALS

A. Solid polymer components
   1. Cast, nonporous, filled polymer, not coated, laminated or of composite construction with through body colors meeting ANSI Z124.3 or ANSI Z124.6, having minimum physical and performance properties specified.
   2. Superficial damage to a depth of 0.010 inch (.25 mm) shall be repairable by sanding and/or polishing.

B. Thickness:
   1. 1/2 inch
C. Edge treatment:
   1. Eased Edge

2.3 ACCESSORIES

A. Joint adhesive:
   1. Manufacturer’s standard one- or two-part adhesive kit to create inconspicuous, nonporous joints.
B. Sealant:
   1. Manufacturer’s standard mildew-resistant, FDA-compliant, NSF 51-compliant (food zone — any type), UL-listed silicone sealant in colors matching components.

2.4 FACTORY FABRICATION

A. Shop assembly
   1. Fabricate components to greatest extent practical to sizes and shapes indicated, in accordance with approved shop drawings and manufacturer’s printed instructions and technical bulletins.
   2. Form joints between components using manufacturer’s standard joint adhesive without conspicuous joints.
      a. Reinforce with strip of solid polymer material, 2" wide.
   3. Provide factory cutouts for plumbing fittings and bath accessories as indicated on the drawings.
   4. Rout and finish component edges with clean, sharp returns.
      a. Rout cutouts, radii and contours to template.
      b. Smooth edges.
      c. Repair or reject defective and inaccurate work.

2.5 FINISHES

A. Refer PLANS and Specification Section 090000 – Finishes

PART 3 — EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with fabricator present for compliance with requirements for installation tolerances and other conditions affecting performance of work.
B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install components plumb, level and rigid, scribed to adjacent finishes, in accordance with approved shop drawings and product data.
    1. Provide product in the largest pieces available.
    2. Form field joints using manufacturer's recommended adhesive, with joints inconspicuous in finished work.
        a. Exposed joints/seams shall not be allowed.
    3. Reinforce field joints with solid surface strips extending a minimum of 1 inch on either side of the seam with the strip being the same thickness as the top.
    4. Cut and finish component edges with clean, sharp returns.
    5. Rout radii and contours to template.
    6. Anchor securely to base cabinets or other supports.
    7. Align adjacent countertops and form seams to comply with manufacturer's written recommendations using adhesive in color to match countertop.
    8. Carefully dress joints smooth, remove surface scratches and clean entire surface.
    9. Install countertops with no more than 1/8-inch (3 mm) sag, bow or other variation from a straight line.

3.3 REPAIR

A. Repair or replace damaged work which cannot be repaired to architect's satisfaction.

3.4 CLEANING AND PROTECTION

A. Keep components clean during installation.
B. Remove adhesives, sealants and other stains.

END OF SECTION 066510

SECTION 072100 - THERMAL INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Glass-fiber blanket insulation.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1.4 INFORMATIONAL SUBMITTALS

A. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each product.

1.5 QUALITY ASSURANCE

A. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect insulation materials from physical damage and from deterioration due to moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

PART 2 - PRODUCTS

2.1 GLASS-FIBER BLANKET INSULATION

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. CertainTeed Corporation.
2. Guardian Fiberglass, Inc.
3. Johns Manville.
4. Knauf Fiber Glass.
5. Owens Corning.

B. Unfaced, Glass-Fiber Blanket Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.

C. Where glass-fiber blanket insulation is indicated by the following thicknesses, provide blankets in batt or roll form with thermal resistances indicated:

1. 5-1/2 inches (140 mm) thick with a thermal resistance of 19 deg F x h x sq. ft./Btu at 75 deg F (3.3 K x sq. m/W at 24 deg C).

2.2 INSULATION FASTENERS

A. Adhesively Attached, Spindle-Type Anchors: Plate welded to projecting spindle; capable of holding insulation of thickness indicated securely in position indicated with self-locking washer in place; and complying with the following requirements:

1. Products: Subject to compliance with requirements, provide one of the following:

a. AGM Industries, Inc.; Series T TACTOO Insul-Hangers.
b. Eckel Industries of Canada; Stic-Klip Type N Fasteners.
c. Gemco; Spindle Type.

2. Plate: Perforated galvanized carbon-steel sheet, 0.030 inch (0.762 mm) thick by 2 inches (50 mm) square.
3. Spindle: Copper-coated, low carbon steel; fully annealed; 0.105 inch (2.67 mm) in diameter; length to suit depth of insulation indicated.

B. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch- (0.41-mm-) thick galvanized steel sheet, with beveled edge for increased stiffness, sized as required to hold insulation securely in place, but not less than 1-1/2 inches (38 mm) square or in diameter.
1. Products: Subject to compliance with requirements, provide one of the following:
a. AGM Industries, Inc.; RC150.
b. AGM Industries, Inc.; SC150.
c. Gemco; Dome-Cap.
d. Gemco; R-150.
e. Gemco; S-150.

2. Protect ends with capped self-locking washers incorporating a spring steel insert to ensure permanent retention of cap in the following locations:

a. Where indicated.

C. Anchor Adhesive: Product with demonstrated capability to bond insulation anchors securely to substrates indicated without damaging insulation, fasteners, and substrates.

1. Products: Subject to compliance with requirements, provide one of the following:

    a. AGM Industries, Inc.; TACTOO Adhesive.
    b. Eckel Industries of Canada; Stic-Klip Type S Adhesive.
    c. Gemco; Tuff Bond Hanger Adhesive.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean substrates of substances that are harmful to insulation or that interfere with insulation attachment.

3.2 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and applications indicated.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.

C. Extend insulation to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

D. Provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.

3.3 INSTALLATION OF INSULATION FOR METAL-FRAMED CONSTRUCTION

A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.

B. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:

1. Loose-Fill Insulation: Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft. (40 kg/cu. m).

3.4 PROTECTION

A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 072100

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Silicone joint sealants.
2. Urethane joint sealants.
3. Mildew-resistant joint sealants.
4. Latex joint sealants.

1.3 ACTION SUBMITTALS

A. Product Data: For each joint-sealant product.

B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

C. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- (13-mm-) wide joints formed between two 6-inch- (150-mm-) long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

D. Joint-Sealant Schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.
4. Joint-sealant color.

1.4 INFORMATIONAL SUBMITTALS

A. Preconstruction Laboratory Test Schedule: Include the following information for each joint sealant and substrate material to be tested:

1. Joint-sealant location and designation.
2. Manufacturer and product name.
3. Type of substrate material.
4. Proposed test.
5. Number of samples required.

B. Preconstruction Laboratory Test Reports: From sealant manufacturer, indicating the following:

1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
2. Interpretation of test results and written recommendations for primers and substrate preparation are needed for adhesion.

C. Preconstruction Field-Adhesion-Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on testing specified in "Preconstruction Testing" Article.

D. Field-Adhesion-Test Reports: For each sealant application tested.

E. Sample Warranties: For special warranties.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

B. Product Testing: Test joint sealants using a qualified testing agency.

1. Testing Agency Qualifications: Qualified according to ASTM C 1021 to conduct the testing indicated.

C. Mockups: Install sealant in mockups of assemblies specified in other Sections that are indicated to receive joint sealants specified in this Section. Use materials and installation methods specified in this Section.

1.6 PRECONSTRUCTION TESTING

A. Preconstruction Laboratory Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.

1. Adhesion Testing: Use ASTM C 794 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
2. Compatibility Testing: Use ASTM C 1087 to determine sealant compatibility when in contact with glazing and gasket materials.
3. Stain Testing: Use ASTM C 1248 to determine stain potential of sealant when in contact with masonry substrates.
4. Submit manufacturer's recommended number of pieces of each type of material, including joint substrates, joint-sealant backings, and miscellaneous materials.
5. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
6. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures, including use of specially formulated primers.
7. Testing will not be required if joint-sealant manufacturers submit data that are based on previous testing, not older than 24 months, of sealant products for adhesion to, staining of, and compatibility with joint substrates and other materials matching those submitted.

B. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint substrates as follows:

1. Locate test joints where indicated on Project or, if not indicated, as directed by Architect.
2. Conduct field tests for each kind of sealant and joint substrate.
3. Notify Architect seven days in advance of dates and times when test joints will be erected.
4. Arrange for tests to take place with joint-sealant manufacturer's technical representative present.

    a. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1.1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.

        1) For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

5. Report whether sealant failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
6. Evaluation of Preconstruction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.

1.7 FIELD CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F (5 deg C).
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.8 WARRANTY

A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

B. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:

1. Movement of the structure caused by stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
2. Disintegration of joint substrates from causes exceeding design specifications.
3. Mechanical damage caused by individuals, tools, or other outside agents.
4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

2.2 SILICONE JOINT SEALANTS

A. Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for Use NT.

1. Products: Subject to compliance with requirements, provide one of the following or pre-approved equal:

   a. Dow Corning Corporation; 799.
   b. GE Advanced Materials - Silicones; UltraGlaze SSG4000.
   c. May National Associates, Inc.; Bondaflex Sil 200 GPN.
   d. Polymeric Systems, Inc.; PSI-631.
   e. Schnee-Morehead, Inc.; SM5731 Poly-Glaze Plus.
   f. Tremco Incorporated; Tremsil 600.

2.3 URETHANE JOINT SEALANTS

A. Single-Component, Pourable, Traffic-Grade, Urethane Joint Sealant: ASTM C 920, Type S, Grade P, Class 25, for Use T.

1. Products: Subject to compliance with requirements, provide one of the following or pre-approved equal:

   a. BASF Building Systems; Sonolastic SL 1.
   b. Bostik, Inc.; Chem-Calk 950.
   c. May National Associates, Inc.; Bondaflex PUR 35 SL.
   d. Pecora Corporation; Urexpan NR-201.
   e. Polymeric Systems, Inc.; Flexiprene 952.
   f. Schnee-Morehead, Inc.; Permathane SM7101.
   g. Sika Corporation. Construction Products Division; Sikaflex - 1CSL.
   h. Tremco Incorporated; Vulkem 45.

2.4 LATEX JOINT SEALANTS

A. Latex Joint Sealant: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.

1. Products: Subject to compliance with requirements, provide one of the following or pre-approved equal:

a. BASF Building Systems; Sonolac.
b. Bostik, Inc.; Chem-Calk 600.
c. May National Associates, Inc.; Bondaflex 600.
d. Pecora Corporation; AC-20+.
e. Schnee-Morehead, Inc.; SM 8200.
f. Tremco Incorporated; Tremflex 834.

2.5 MILDEW-RESISTANT JOINT SEALANTS

A. Mildew-Resistant, Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for Use NT.

1. Products: Subject to compliance with requirements, provide one of the following or pre-approved equal:

a. Pecora Corporation; 898.
b. Tremco Incorporated; Tremsil 600.

2.6 JOINT-SEALANT BACKING

A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. BASF Corporation; Construction Systems.
b. Construction Foam Products; a division of Nomaco, Inc.

B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.7 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:

    a. Concrete.
    b. Masonry.

3. Remove laitance and form-release agents from concrete.
4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:

    a. Metal.

b. Glass.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application, and replace them with dry materials.

D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint profile per Figure 8A in ASTM C 1193 unless otherwise indicated.

4. Provide flush joint profile at locations indicated according to Figure 8B in ASTM C 1193.
5. Provide recessed joint configuration of recess depth and at locations according to Figure 8C in ASTM C 1193.

    a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

3.4 FIELD QUALITY CONTROL

A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:

1. Extent of Testing: Test completed and cured sealant joints as follows:

    a. Perform 10 tests for the first 1000 feet (300 m) of joint length for each kind of sealant and joint substrate.
    b. Perform one test for each 1000 feet (300 m) of joint length thereafter or one test per each floor per elevation.

2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.

    a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

3. Inspect tested joints and report on the following:

    a. Whether sealants filled joint cavities and are free of voids.
    b. Whether sealant dimensions and configurations comply with specified requirements.
    c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion complies with sealant manufacturer's field-adhesion hand-pull test criteria.

4. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant material, sealant configuration, and sealant dimensions.
5. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.

B. Evaluation of Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.5 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.6 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.7 JOINT-SEALANT SCHEDULE

A. Joint-Sealant Application: Interior joints in horizontal traffic surfaces.

1. Joint Locations:

    a. Isolation joints in cast-in-place concrete slabs.
    b. Control and expansion joints in tile flooring.
    c. Other joints as indicated.

2. Urethane Joint Sealant: Single component, pourable, traffic grade.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

B. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Locations:

    a. Control and expansion joints on exposed interior surfaces of exterior walls.
    b. Perimeter joints of exterior openings where indicated.
    c. Tile control and expansion joints.
    d. Vertical joints on exposed surfaces of interior unit masonry, concrete walls and partitions.
    e. Joints on underside of plant-precast structural concrete.
    f. Perimeter joints between interior wall surfaces and frames of interior doors, windows and elevator entrances.
    g. Other joints as indicated.

2. Joint Sealant: Latex.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

C. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Sealant Location:

   a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
   b. Tile control and expansion joints where indicated.
   c. Other joints as indicated.

2. Joint Sealant: Mildew resistant, single component, nonsag, neutral curing, Silicone.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

END OF SECTION 079200

SECTION 081113 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes standard hollow metal doors and frames.

B. Related Sections: The following Sections contain requirements that relate to this Section:
   1. Section 087100 "Door Hardware" for door hardware and weatherstripping.
   2. Section 088000 "Glazing" for glass in steel doors and sidelights.
   3. Section 099123 "Interior Painting" for field painting primed doors and frames.

1.3 SUBMITTALS

A. Submit each item in this Article according to the Conditions of the Contract and Division 01 Specification Sections.

B. Product Data for each type of door and frame specified, including details of construction, materials, dimensions, hardware preparation, core, label compliance, sound ratings, profiles, and finishes.

C. Shop Drawings showing fabrication and installation of steel doors and frames. Include details of each frame type, elevations of door design types, conditions at openings, details of construction, location and installation requirements of door and frame hardware and reinforcements, and details of joints and connections. Show anchorage and accessory items.

D. Door Schedule: Submit schedule of doors and frames using same reference numbers for details and openings as those on Contract Drawings.

   1. Indicate coordination of glazing frames and stops with glass and glazing requirements.

1.4 QUALITY ASSURANCE

A. Steel Door and Frame Standard: Comply with ANSI A 250.8, unless more stringent requirements are indicated.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver doors and frames cardboard-wrapped or crated to provide protection during transit and job storage. Provide additional protection to prevent damage to finish of factory-finished doors and frames.

B. Inspect doors and frames on delivery for damage. Minor damages may be repaired provided refinished items match new work and are acceptable to Architect-Engineer; otherwise, remove and replace damaged items as directed.

C. Store doors and frames at building site under cover. Place units on minimum 4-inch- (100-mm-) high wood blocking. Avoid using nonvented plastic or canvas shelters that could create a humidity chamber. If cardboard wrappers on doors become wet, remove cartons immediately. Provide minimum 1/4-inch (6-mm) spaces between stacked doors to promote air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Steel Doors and Frames:

a. Amweld Building Products, Inc.
b. Ceco Door Products; a United Dominion Company.
c. Curries Company.
d. Republic Builders Products.
e. Steelcraft; a division of Ingersoll-Rand.

2.2 MATERIALS

A. Hot-Rolled Steel Sheets and Strip: Commercial-quality carbon steel, pickled and oiled, complying with ASTM A 569 (ASTM A 569M).

B. Cold-Rolled Steel Sheets: Carbon steel complying with ASTM A 366 (ASTM A 366M), commercial quality, or ASTM A 620 (ASTM A 620M), drawing quality, special killed.

C. Galvanized Steel Sheets: Zinc-coated carbon steel complying with ASTM A 526 (ASTM A 526M), commercial quality, or ASTM A 642 (ASTM A 642M), drawing quality, hot-dip galvanized according to ASTM A 525, with A 60 or G 60 (ASTM A 525M, with Z 180 or ZF 180) coating designation, mill phosphatized.

D. Supports and Anchors: Fabricated from not less than 18 gage 0.0478-inch-thick steel sheet; 18 gage 0.0516-inch-thick including coating galvanized steel where used with galvanized steel frames.

E. Inserts, Bolts, and Fasteners: Manufacturer's standard units. Where items are to be built into exterior walls, hot-dip galvanize complying with ASTM A 153, Class C or D as applicable.

~~2.3 DOORS~~

~~A. Steel Doors: Provide 1-3/4-inch-thick doors of materials and ANSI/SDI 100 levels and models specified below, or as indicated on Drawings or schedules:~~

~~1. Interior Doors: Level 3, extra heavy-duty, Model 1, full flush design, minimum 16 gage 0.0598-inch-thick cold-rolled steel sheet faces.~~
~~2. Exterior Doors: Level 3, extra heavy-duty, Model 1, full flush design, minimum 16 gage 0.0635-inch-thick including coating galvanized steel sheet faces.~~

2.4 FRAMES

A. Provide metal frames for doors, transoms, sidelights, borrowed lights, and other openings, according to ANSI/SDI 100, and of types and styles as shown on Drawings and schedules. Conceal fastenings, unless otherwise indicated. Fabricate frames of minimum 18 gage 0.0478-inch-thick cold-rolled steel sheet.

1. Fabricate frames with mitered or coped and continuously welded corners.
2. Fabricate frames for interior openings over 48 inches (1220 mm) wide from 16 gage 0.0598-inch-thick steel sheet.
3. Form exterior frames from 14 gage 0.0785-inch-thick including coating galvanized steel sheet.

B. Door Silencers: Except on weatherstripped frames, drill stops to receive 3 silencers on strike jambs of single-door frames and 2 silencers on heads of double-door frames.

C. Plaster Guards: Provide minimum 26 gage 0.0179-inch-thick steel plaster guards or mortar boxes at back of hardware cutouts where mortar or other materials might obstruct hardware operation and to close off interior of openings.

2.5 FABRICATION

A. Fabricate steel door and frame units to be rigid, neat in appearance, and free from defects, warp, or buckle. Where practical, fit and assemble units in manufacturer's plant. Clearly identify work that cannot be permanently factory assembled before shipment, to assure proper assembly at Project site. Comply with ANSI/SDI 100 requirements.

1. Internal Construction: Manufacturer's standard construction which complies with SDI standards:
2. Clearances: Not more than 1/8 inch (3.2 mm) at jambs and heads, except not more than 1/4 inch (6.4 mm) between non-fire-rated pairs of doors. Not more than 3/4 inch (19 mm) at bottom, 1/2-inch at exterior doors per sill detail..

a. Fire Doors: Provide clearances according to NFPA 80.

B. Fabricate exposed faces of doors and panels from only cold-rolled steel sheet.

C. Tolerances: Comply with SDI 117 "Manufacturing Tolerances Standard Steel Doors and Frames."

D. Fabricate concealed stiffeners, reinforcement and edge channels from either cold- or hot-rolled steel sheet.

E. Galvanized Steel Doors, Panels, and Frames: For the following locations, fabricate doors, panels, and frames from galvanized steel sheet according to SDI 112. Close top and bottom edges of doors flush as an integral part of door construction or by addition of minimum 16 gage 0.0635-inch-thick including coating galvanized steel channels, with channel webs placed even with top and bottom edges. Seal joints in top edges of doors against water penetration.

1. At exterior locations.

F. Exposed Fasteners: Unless otherwise indicated, provide countersunk flat or oval heads for exposed screws and bolts.

G. Thermal-Rated (Insulating) Assemblies: At exterior locations and elsewhere as shown or scheduled, provide doors fabricated as thermal-insulating door and frame assemblies and tested according to ASTM C 236 or ASTM C 976 on fully operable door assemblies.

1. Unless otherwise indicated, provide thermal-rated assemblies with U-value rating of 0.41 Btu/sq. ft. x h x deg F (2.33 W/sq. m x K) or better.

H. Hardware Preparation: Prepare doors and frames to receive mortised and concealed hardware according to final door hardware schedule and templates provided by hardware supplier. Comply with applicable requirements of SDI 107 and ANSI A115 Series specifications for door and frame preparation for hardware.

1. For concealed overhead door closers, provide space, cutouts, reinforcing, and provisions for fastening in top rail of doors or head of frames, as applicable.

I. Reinforce doors and frames to receive surface-applied hardware. Drilling and tapping for surface-applied hardware may be done at Project site. Provide astragals for pairs of doors.

J. Locate hardware as indicated on Shop Drawings or, if not indicated, according to the Door and Hardware Institute's (DHI) "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."

2.6 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual" for recommendations relative to applying and designating finishes.

B. Comply with SSPC-PA 1, "Paint Application Specification No. 1," for steel sheet finishes.

C. Apply primers to doors and frames after fabrication.

2.7 GALVANIZED STEEL SHEET FINISHES

A. Surface Preparation: Clean surfaces with nonpetroleum solvent so that surfaces are free of oil or other contaminants. After cleaning, apply a conversion coating of the type suited to the organic coating applied over it. Clean welds, mechanical connections, and abraded areas, and apply galvanizing repair paint specified below to comply with ASTM A 780.

1. Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing welds in galvanized steel, with dry film containing not less than 94 percent zinc dust by weight, and complying with DOD-P-21035 or SSPC-Paint 20.

B. Factory Priming for Field-Painted Finish: Where field painting after installation is indicated, apply air-dried primer specified below immediately after cleaning and pretreatment.

1. Shop Primer: Zinc-dust, zinc-oxide primer paint complying with performance requirements of FS TT-P-641, Type II.

2.8 STEEL SHEET FINISHES

A. Surface Preparation: Solvent-clean surfaces to comply with SSPC-SP 1 to remove dirt, oil, grease, and other contaminants that could impair paint bond. Remove mill scale and rust, if present, from uncoated steel to comply with SSPC-SP 5 (White Metal Blast Cleaning) or SSPC-SP 8 (Pickling).

B. Pretreatment: Immediately after surface preparation, apply a conversion coating of type suited to organic coating applied over it.

C. Factory Priming for Field-Painted Finish: Apply shop primer that complies with ANSI A224.1 acceptance criteria, is compatible with finish paint systems indicated, and has capability to provide a sound foundation for field-applied topcoats. Apply primer immediately after surface preparation and pretreatment.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Install steel doors, frames, and accessories according to Shop Drawings, manufacturer's data, and as specified.

B. Placing Frames: Comply with provisions of SDI 105, unless otherwise indicated. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is completed, remove temporary braces and spreaders, leaving surfaces smooth and undamaged.

1. Except for frames located in cast-in-place concrete place frames before constructing enclosing walls and ceilings.

2. In masonry construction, install at least 3 wall anchors per jamb adjacent to hinge location on hinge jamb and at corresponding heights on strike jamb. Acceptable anchors include masonry wire anchors and masonry T-shaped anchors.
3. At cast-in-place concrete install at least 3 completed opening anchors per jamb adjacent to hinge location on hinge jamb and at corresponding heights on strike jamb. Set frames and secure to adjacent construction with bolts and masonry anchorage devices.
4. In metal-stud partitions, install at least 3 wall anchors per jamb at hinge and strike levels. In steel-stud partitions, attach wall anchors to studs with screws.
5. Install fire-rated frames according to NFPA 80.
6. Door Installation: Fit hollow-metal doors accurately in frames, within clearances specified in ANSI/SDI 100.

3.2 ADJUSTING AND CLEANING

A. Prime Coat Touchup: Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touchup of compatible air-drying primer.

B. Protection Removal: Immediately before final inspection, remove protective wrappings from doors and frames.

END OF SECTION 081113

SECTION 081416 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Solid-core doors with wood-veneer faces.
2. Factory finishing flush wood doors.
3. Factory fitting flush wood doors to frames and factory machining for hardware.

B. Related Requirements:

1. Section 081113 “Hollow Metal Frames and Doors” for wood doors in steel frames.
2. Section 087100 “Door Hardware” for door hardware for flush wood doors.
3. Section 088000 "Glazing" for glass view panels in flush wood doors.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of door. Include details of core and edge construction and trim for openings. Include factory-finishing specifications.

B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; and the following:

1. Dimensions and locations of mortises and holes for hardware.
2. Dimensions and locations of cutouts.
3. Undercuts.
4. Requirements for veneer matching.
5. Doors to be factory finished and finish requirements.
6. Fire-protection ratings for fire-rated doors.

C. Samples for Verification:

1. Factory finishes applied to actual door face materials, approximately 8 by 10 inches (200 by 250 mm), for each material and finish. For each wood species and transparent finish, provide set of three Samples showing typical range of color and grain to be expected in finished Work.
2. Corner sections of doors, approximately 8 by 10 inches (200 by 250 mm), with door faces and edges representing actual materials to be used.

a. Provide Samples for each species of veneer and solid lumber required.
b. Provide Samples for each color, texture, and pattern of plastic laminate required.
c. Finish veneer-faced door Samples with same materials proposed for factory-finished doors.

3. Frames for light openings, 6 inches (150 mm) long, for each material, type, and finish required.

1.4 INFORMATIONAL SUBMITTALS

A. Sample Warranty: For special warranty.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Comply with requirements of referenced standard and manufacturer's written instructions.

B. Package doors individually in plastic bags or cardboard cartons.

C. Mark each door on top and bottom rail with opening number used on Shop Drawings.

1.6 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and HVAC system is operating and maintaining temperature between 60 and 90 deg F (16 and 32 deg C) and relative humidity between 30 and 50 percent during remainder of construction period.

1.7 WARRANTY

A. A. Special Warranty: Manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Warping (bow, cup, or twist) more than 1/4 inch (6.4 mm) in a 42-by-84-inch (1067-by-2134-mm) section.
b. Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch (0.25 mm in a 76.2-mm) span.

2. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.
3. Warranty Period for Solid-Core Interior Doors: Life of installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following. No substitutions; wood doors from other manufacturers will not be accepted unless submitted and approved in accordance with terms and conditions of Section 012500 “Substitution Procedures.”

1. Algoma Hardwoods, Inc.
2. Eggers Industries.
3. Graham Wood Doors; ASSA ABLOY Group company.
4. Marshfield DoorSystems, Inc.
5. Oshkosh Door Company.
6. VT Industries Inc.

B. Source Limitations: Obtain flush wood doors from single manufacturer.

2.2 FLUSH WOOD DOORS, GENERAL

A. Quality Standard: In addition to requirements specified, comply with WDMA I.S.1-A, "Architectural Wood Flush Doors."
1. Contract Documents contain selections chosen from options in quality standard and additional requirements beyond those of quality standard. Comply with those selections and requirements in addition to quality standard.

B. WDMA I.S.1-A Performance Grade: Extra Heavy Duty.

C. Particleboard-Core Doors:

1. Particleboard: ANSI A208.1, Grade LD-2.
2. Blocking: Provide wood blocking in particleboard-core doors as follows:

a. 5-inch (125-mm) top-rail blocking, in doors indicated to have closers.
b. 5-inch (125-mm) bottom-rail blocking, in exterior doors and doors indicated to have kick, mop, or armor plates.
c. 5-inch (125-mm) midrail blocking, in doors indicated to have exit devices.

3. Provide doors with glued-wood-stave or structural-composite-lumber cores instead of particleboard cores for doors indicated to receive exit devices.

2.3 LIGHT FRAMES

A. Wood Beads for Light Openings in Wood Doors: Provide manufacturer's standard wood beads unless otherwise indicated.

1. Wood Species: Same species as door faces.
2. Profile: Flush rectangular beads.

2.4 FABRICATION

A. Factory fit doors to suit frame-opening sizes indicated. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.

1. Comply with NFPA 80 requirements for fire-rated doors.

B. Factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI-WDHS-3. Comply with final hardware schedules, door frame Shop Drawings, BHMA-156.115-W, and hardware templates.

1. Coordinate with hardware mortises in metal frames to verify dimensions and alignment before factory machining.
2. Metal Astragals: Factory machine astragals and formed-steel edges for hardware for pairs of fire-rated doors.

C. Openings: Factory cut and trim openings through doors.

1. Light Openings: Trim openings with moldings of material and profile indicated.
2. Glazing: Factory install glazing in doors indicated to be factory finished. Comply with applicable requirements in Section 088000 "Glazing."

2.5 FACTORY FINISHING

A. General: Comply with referenced quality standard for factory finishing. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.

1. Finish faces, all four edges, edges of cutouts, and mortises. Stains and fillers may be omitted on top and bottom edges, edges of cutouts, and mortises.

B. Factory finish doors.

C. Finish:
1. Species: Match Existing
2. Grade: Premium
3. Finish: Match Existing
4. Cut: Match Existing
5. Match: Match Existing

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and installed door frames, with Installer present, before hanging doors.

1. Verify that installed frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.

2. Reject doors with defects.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Hardware: For installation, see Section 087100 "Door Hardware."

B. Installation Instructions: Install doors to comply with manufacturer's written instructions and referenced quality standard, and as indicated.

1. Install fire-rated doors according to NFPA 80.
2. Install smoke- and draft-control doors according to NFPA 105.

C. Job-Fitted Doors: Align and fit doors in frames with uniform clearances and bevels as indicated below; do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors. Machine doors for hardware. Seal edges of doors, edges of cutouts, and mortises after fitting and machining.

1. Clearances: Provide 1/8 inch (3.2 mm) at heads, jambs, and between pairs of doors. Provide 1/8 inch (3.2 mm) from bottom of door to top of decorative floor finish or covering unless otherwise indicated. Where threshold is shown or scheduled, provide 1/4 inch (6.4 mm) from bottom of door to top of threshold unless otherwise indicated.

a. Comply with NFPA 80 for fire-rated doors.
b. Bevel non-fire-rated doors 1/8 inch in 2 inches (3-1/2 degrees) at lock and hinge edges.

2. Bevel fire-rated doors 1/8 inch in 2 inches (3-1/2 degrees) at lock edge; trim stiles and rails only to extent permitted by labeling agency.

D. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.

E. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

3.3 ADJUSTING

A. Operation: Rehang or replace doors that do not swing or operate freely.

B. Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be repaired or refinished if Work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION 081416

SECTION 084113 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

1. GENERAL

1.1 SECTION INCLUDES

A. Aluminum-framed storefront, with vision glass.

B. Aluminum doors and frames.

D. Door hardware.

E. Perimeter sealant.

1.2 RELATED REQUIREMENTS

A. Section 072100 - THERMAL INSULATION.

B. Section 079200 – JOINT SEALANTS.

D. Section 088000 – GLAZING.

1.3 REFERENCE STANDARDS

A. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site; American Architectural Manufacturers Association; 2012.

B. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; American Architectural Manufacturers Association; 2012.

C. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections; American Architectural Manufacturers Association; 2009.

D. ASCE 7 - Minimum Design Loads for Buildings and Other Structures; American Society of Civil Engineers; 2011.

E. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2010.

F. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2013.

G. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2004 (Reapproved 2012).

H. ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2002 (Reapproved 2010).

I. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2009).

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordinate with installation of other components that comprise the exterior enclosure.

B. Preinstallation Meeting: Conduct a preinstallation meeting one week before starting work of this section; require attendance by all affected installers.

1.5 SUBMITTALS

A. See Division 0 for submittal procedures.

B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, door hardware, internal drainage details.

C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related Work, expansion and contraction joint location and details, and field welding required.

D. Design Data: Provide framing member structural and physical characteristics, engineering calculations, dimensional limitations.

E. Hardware Schedule: Complete itemization of each item of hardware to be provided for each door, cross-referenced to door identification numbers in Contract Documents.

F. Samples: Submit two samples 2 x 2 inches (51 x 51 mm) in size illustrating finished aluminum surface, glass, infill panels, glazing materials.

G. Manufacturer's Certificate: Certify that the products supplied meet or exceed the specified requirements.

H. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.6 QUALITY ASSURANCE

A. Designer Qualifications: Design structural support framing components under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed at the State in which the Project is located.

B. Manufacturer and Installer Qualifications: Company specializing in manufacturing aluminum glazing systems with minimum 5 years of documented experience.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Handle products of this section in accordance with AAMA CW-10.

B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

1.8 FIELD CONDITIONS

A. Do not install sealants when ambient temperature is less than 40 degrees F (5 degrees C). Maintain this minimum temperature during and 48 hours after installation.

1.9 WARRANTY

A. Correct defective Work within a five year period after Date of Substantial Completion.

2. PRODUCTS

2.1 BASIS OF DESIGN -- FRAMING FOR INSULATING GLAZING

A. Center-Set Style, Thermally-Broken:
   1. Basis of Design: EFCO Corporation; Series 403, Thermal Storefront Framing.
   2. Vertical Mullion Dimensions: 2 inches wide by 4-1/2 inches deep (50 mm wide by 114 mm deep).

B. Other Manufacturers: Provide either the product identified as "Basis of Design" or an equivalent product of one of the manufacturers listed below:
   1. Kawneer - an Alcoa Company.
   2. Old Castle.

C. Substitution Procedures.
   1. For any product not identified as "Basis of Design", submit information as specified for substitutions.

2.2 BASIS OF DESIGN -- SWINGING DOORS

A. Medium Stile, Monolithic Glazing:
   1. Basis of Design: EFCO Corporation; Series D300.
   2. Thickness: 1-3/4 inches (43 mm).

B. Other Manufacturers: Provide either the product identified as "Basis of Design" or an equivalent product of one of the manufacturers listed below:
   1. Kawneer - an Alcoa Company.
   2. Old Castle.

C. Substitutions.
   1. For any product not identified as "Basis of Design", submit information as specified for substitutions.

2.3 STOREFRONT

A. Aluminum-Framed Storefront: Shop fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
   1. Finish: Class I color anodized.
      a. Factory finish all surfaces that will be exposed in completed assemblies.
      b. Touch-up surfaces cut during fabrication so that no natural aluminum is visible in completed assemblies, including joint edges.
      c. Coat concealed metal surfaces that will be in contact with cementitious materials or dissimilar metals with bituminous paint.
   2. Finish Color: Clear Anodized.
   3. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors and hardware; fasteners and attachments concealed from view; reinforced as required for imposed loads.
   4. Construction: Eliminate noises caused by wind and thermal movement, prevent vibration harmonics, and prevent "stack effect" in internal spaces.
   5. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
   6. Expansion/Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 120 degrees F (49 degrees C) over a 12 hour period without causing detrimental effect to system components, anchorages, and other building elements.
   7. Movement: Allow for movement between storefront and adjacent construction, without damage to components or deterioration of seals.
   8. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.
   9. Air and Vapor Seal: Maintain continuous air barrier and vapor retarder throughout assembly, primarily in line with inside pane of glazing and inner sheet of infill panel and heel bead of glazing compound.

B. Performance Requirements:
   1. Wind Loads: Design and size components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330, using loads 1.5 times the design wind loads and 10 second duration of maximum load.
      a. Design Wind Loads: Comply with requirements of 2018 IBC code. Reference Structural drawings General Notes for specific design criteria.
      b. Member Deflection: Limit member deflection to 1/175 in any direction, with full recovery of glazing materials.

2. Water Penetration Resistance: No uncontrolled water on interior face, when tested in accordance with ASTM E331 at pressure differential of 8.00 lbf/sq ft (390 Pa).
3. Air Leakage: Maximum of 0.06 cu ft/min/sq ft (0.3 L/s/sq m) of wall area, when tested in accordance with ASTM E283 at 6.27 pounds per square foot (300 Pa) pressure differential across assembly.
4. Condensation Resistance Factor of Framing: 56, minimum, measured in accordance with AAMA 1503.
5. Overall U-value Including Glazing: 0.43 Btu/(hr sq ft deg F) (.126 W/(sq m K)), maximum in accordance with NFRC 100.

2.4 COMPONENTS

A. Aluminum Framing Members: Tubular aluminum sections, thermally broken with interior section insulated from exterior, drainage holes and internal weep drainage system.
1. Framing members for interior applications need not be thermally broken.
2. Glazing stops: Flush.
3. Structurally Reinforced Members: Extruded aluminum with internal reinforcement of structural steel member.

B. Glazing: As specified in Section 088000 - GLAZING.

C. Swing Doors: Glazed aluminum.
1. Thickness: 1-3/4 inches (43 mm).
2. Top Rail: 4 inches (100 mm) wide.
3. Vertical Stiles: 3 1/2 inches (89 mm) wide.
4. Bottom Rail: 10 inches (254 mm) wide.
5. Glazing Stops: Square.
6. Finish: Same as storefront.

2.5 MATERIALS

A. Extruded Aluminum: ASTM B221 (ASTM B221M).

B. Sheet Aluminum: ASTM B209 (ASTM B209M).

C. Structural Supporting Anchors Attached to Structural Steel: Design for bolted attachment.

D. Fasteners: Stainless steel.

E. Perimeter Sealant: Type as specified in Section 079200 – JOINT SEALANTS.

2.6 FINISHES

A. Class I Color Anodized Finish: AAMA 611 AA-M12C22A42 Integrally colored anodic coating or AAMA 612 electrolytically deposited colored anodic coating with electrolytically deposited organic seal; not less than 0.7 mils (0.018 mm) thick.

2.7 HARDWARE

A. For each door, include weatherstripping, sill sweep strip, and threshold.

C. Sill Sweep Strips: Resilient seal type, of neoprene; provide on all doors.

D. Threshold: Extruded aluminum, one piece per door opening, ribbed surface; provide on all exterior doors.

E. Hinges: Select continuous gear type.
1. Provide on all doors.

F. Push/Pull Set: Ultraline offset 1" dia wire pulls and push bars - US32D finish.
1. Provide on interior doors.

H. Closers: LCN 4111 CUSH surface mounted closers with 18G drop plate and PA arm.
   1. Provide on all doors.

I. Cylinders: As specified in Section 087100 - DOOR HARDWARE.

3. EXECUTION

3.1 EXAMINATION

A. Verify dimensions, tolerances, and method of attachment with other work.

B. Verify that wall openings and adjoining air and vapor seal materials are ready to receive work of this section.

3.2 INSTALLATION

A. Install wall system in accordance with manufacturer's instructions.

B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

C. Provide alignment attachments and shims to permanently fasten system to building structure.

D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.

E. Provide thermal isolation where components penetrate or disrupt building insulation.

F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.

G. Where fasteners penetrate sill flashings, make watertight by seating and sealing fastener heads to sill flashing.

H. Coordinate attachment and seal of perimeter air and vapor barrier materials.

I. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

J. Set thresholds in bed of mastic and secure.

K. Install hardware using templates provided.

L. Install perimeter sealant in accordance with Section 079200 – JOINT SEALANTS.

M. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.3 TOLERANCES

A. Maximum Variation from Plumb: 0.06 inches every 3 ft (1.5 mm/m) non-cumulative or 1/16 inches per 10 ft (1.5 mm/3 m), whichever is less.

B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch (0.8 mm).

3.4 ADJUSTING

A. Adjust operating hardware for smooth operation.

3.5 CLEANING

A. Remove protective material from pre-finished aluminum surfaces.

B. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.

C. Remove excess sealant by method acceptable to sealant manufacturer.

3.6 PROTECTION

A. Protect installed products from damage during subsequent construction.

3.7 SPECIAL REQUIREMENT

A. Glazing in storefronts, windows, and doors shall be selected by ARCHITECT.

END OF SECTION 084113

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Intent: The intent of this Section is to provide finish hardware for the proper operation and control of all wood, hollow metal and aluminum doors in the Project. Prior to bidding, notify the Architect of any doors that do not have hardware meeting this intention.

B. The hardware supplier will be responsible to furnish correct hardware on labeled doors to satisfy State and Local Building Codes.

C. Should items of hardware, not definitely specified, be required for completion of work, furnish such items of type and quality suitable to the services required and comparable to the adjacent hardware.

D. This Section includes known commercially, as finish or door hardware that are required for swing, and folding doors, except special types of unique hardware specified in the same sections as the doors and door frames on which they are installed. This Section includes, but is not necessarily limited to furnishing and installing complete, the following:

1. Finish hardware for proper operation, function, control and protection of all doors, as required.

E. Related work in other sections:

1. Section 081113 “Hollow Metal Doors and Frames” for hollow metal doors, frames and silencers.
2. Section 081416 “Flush Wood Doors” for wood doors.

F. SUBMITTALS

F. Comply with requirements of the Conditions of the Contract and Division 01 Sections.

G. Product Data: Submit manufacturer’s technical product data for each hardware item. Include information necessary to show compliance with requirements, and include instructions for installation and for maintenance of operating parts and finishes.

H. Hardware Schedule: Submit a hardware schedule in a vertical format (horizontal format not acceptable), organized into sets, including the information below. Designations for door

numbers and hardware sets in the schedule shall match those used in the Construction Documents.

1. Hardware Schedule shall be coordinated with doors, frames, and related work to ensure proper size, thickness, hand function, and finish of door hardware. Provide index at end of submittal listing door and specified hardware. In addition, indicate page on submittal where door is found.
2. Catalog cuts of each type of exposed hardware unit, highlighted in color to indicate compliance with the Hardware Schedule and PACS equipment.

    a. Type, style, function, size send finish of each hardware or PACS item.
    b. Name and manufacturer of each item.
    c. Fastenings and other pertinent information.
    d. Explanation of all abbreviations, symbols, codes, etc., contained in schedule.
    e. Mounting locations for hardware.
    f. Door and frame sizes and materials.
    g. Deviations from Specifications shall be noted in cover letter.

I. Submittal Sequence: Submit schedule at earliest possible date particularly where acceptance of hardware schedule must precede fabrication of other work (e.g., hollow metal frames), which is critical in the project construction schedule. Include with schedule the product data, samples, shop drawings of other work affected by finish hardware, and other information essential to the coordinated review of hardware schedule.

J. Keying Schedule: Submit separate detailed schedule indicating keying for all locks. Keying schedule must be approved before ordering any locks.

K. Templates: Furnish hardware templates to each fabricator of doors, frames and other work. To be factory prepared for the installation of hardware: Upon request check shop drawings of such other work, to confirm that adequate provisions are made for proper location and installation of hardware.

1.3 QUALITY ASSURANCE

A. Supplier Qualifications: A recognized Architectural Finish Hardware Supplier, with warehousing facilities, who has been furnishing hardware in the Project's vicinity for a period of not less than two (2) years. Supplier shall be or employ an experienced Architectural Hardware Consultant (AHC) who is certified by and member of the Door and Hardware Institute. The Architectural hardware Consultant shall be available, at reasonable times during the course of the work, for consultation about Project's hardware requirements, to Owner, Architect and Contractor.

B. Fire-Rated Openings: Provide hardware for fire-rated openings in compliance with NFPA Standard No. 80, No. 101 and local building code requirements. Provide only hardware, which has been tested and listed, by UL, FM or Warnock Hersey for types and sizes of doors required and complies with requirements of door and door frame labels.

1. Where emergency exit devices are required on fire-rated doors, (with supplementary marking on doors' UL or FM labels indicating "Fire Door to be Equipped with Fire Exit Hardware") provide UL or FM label on exit devices indicating "Fire Exit Hardware".

C. Standards: Comply with the requirements of the latest edition of the following standards, unless indicated otherwise:

1. American National Standards Institute (ANSI) Publications:

   a. A115 Series - Door and Frame Preparation
   b. A156 Series -Hardware

2. Builders Hardware Manufacturers Association (BHMA) Publications:

   a. 1201- Auxiliary Hardware
   b. 1301 - Materials and Finishes

3. Door and Hardware Institute (DHI) Publications:

   a. Keying - Procedures, Systems, and Nomenclature
   b. Abbreviations and Symbols
   c. Hardware for Labeled Fire Doors
   d. Recommended Locations for Builder's Hardware for Standard and Custom Steel Doors and Frames
   e. Wood Door Standards W1, W2, WDHS-2 WDHS-3

4. National Fire Protection Association (NFPA) Publications:

   a. NFPA Pamphlet No. 80 - Standards for Fire Doors and Windows.
   b. NFPA Pamphlet No. 101.

5. International Building Code - 2009 Edition.
6. Americans with Disabilities Act (ADA).

1.4 DELIVERIES, STORAGE AND HANDLING

A. Package each hardware item in separate containers with all screws, wrenches, installation instructions and installation templates. Mark each box with hardware heading and door number according to approved hardware schedule.

B. Deliver individually packaged hardware items at the proper times to the proper locations (shop or project site) for installation: Provide a complete packing list showing items, door numbers and hardware headings with each shipment.

C. Store hardware in shipping cartons above ground and under cover to prevent damage. Provide secure lockup for door hardware delivered to the Project, but not yet installed. Control handling and installation of hardware items that are not immediately replaceable -so that completion of the Work will not be delayed by hardware losses both before and after installation.

D. Aluminum Door Hardware: Deliver hardware for aluminum doors as directed by the door supplier.

PART 2 - PRODUCTS

2.1 HARDWARE - GENERAL

A. Provide the materials or products indicated by trade names, manufacturer's name, or catalog number. Substitutions will not be permitted except as described in Division 01.

B. Provide manufacturer's standard products meeting the design intent of this Specification, free of imperfections affecting appearance or serviceability.

1. Provide hardware complete with all fasteners, anchors, instructions, layout templates, and any specialized tools as required for satisfactory installation and adjustment.
2. Hand of door: Drawings show direction of slide, swing or hand of each door leaf. Furnish each item of hardware for proper installation and operation of door movement as shown.
3. Furnish screws for installation, with each hardware item. Provide Phillips flat-head screws except as otherwise indicated or approved. Finish screws exposed under any condition to match hardware finish or, if exposed in surfaces of other work, to match finish of such other work as closely as possible. Use machine screws for metal connections and wood screws for connections to wood. Use manufacturer's screws to secure hardware.
4. Provide concealed fasteners for hardware units which are exposed when door is closed, except to extent no standard units of type specified are available with concealed fasteners. Do not use through bolts for installation where bolt, head or nut on opposite face is exposed in other work, except where indicated otherwise or where it is not feasible to adequately reinforce the work. In such cases, provide sleeves for each through bolt or use sex screw fasteners.
5. Special Tools: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of finish hardware.

C. Hardware is specified in the hardware schedule by set, type, and functions, which have been selected as best meeting the application requirements. Acceptable products for each category are specified in Paragraph 2.5, "Hardware Products".

2.2 SPECIAL REQUIREMENTS

A. Hinges:

1. Provide non-removable pins for all exterior doors. Use nonrising pins for all other doors. Provide continuous hinge at exterior doors where specified.

B. Locksets:

1. All locksets to be Grade 1 heavy duty cylindrical, unless noted otherwise.

2. Closers:
   a. Comply with manufacturer's recommendations for unit size based on door size, weather exposure and usage.
   b. Provide parallel arms for all overhead closers, except as otherwise indicated.
   c. All Closers UL Certified to be in compliance with UBC 7.2 and UL 10C.
   d. Closers with Pressure Relief Values will not be acceptable.
   e. Supplier to provide any brackets or plates required for proper Installation of door closers.

C. Exit Devices:

1. All latchbolts to be deadlatching type.
2. All touchbars to be stainless steel.

D. Special Notes

1. All doors to have operable hardware.
2. Provide stop that is required for the application. A wall stop is preferred. If an overhead stop or floor stop is a better application, it is to be provided.
3. Smoke seal and intumescent seal is to be provided as required on fire labeled openings.
4. Provide drop plates and mounting brackets for closers if required.

2.3 KEYING

A. All locks shall be keyed to the existing Best master key system. Keying Schedule must be approved by the Owner prior to ordering any locks.

B. Key all locks separately, or alike, as directed by the Owner's Representative and Architect.

C. Provide keys as follows:

1. Change Keys: Two per lock or as required by Owner’s representative.
2. Master Keys: Six required (per system) or as required by Owner’s representative.

D. Identification: Stamp all (master-type) keys with the following:

1. Do Not Duplicate.
2. Key change number (all keys).

2.4 HARDWARE FINISHES

A. Provide matching finishes for hardware units at each door to the greatest extent possible, unless otherwise indicated. In general, match items to the finish for the latch, lock or push pull unit for color and texture.

B. Hardware finishes as follows:

1. 626: Satin chrome-plated.

2. 630: Satin stainless steel .

PART 3 - EXECUTION

3.1 PREPARATION

A. Carefully inspect doors, and conditions under which hardware will be installed. Notify the Architect of any conditions that would adversely affect the installation or subsequent door operation. Do not proceed until unsatisfactory conditions are corrected.

B. Refer to other Division 08 Sections for installation requirements.

1. Prior to hardware installation, the General Contractor shall setup a meeting with the Hardware Supplier and the Hardware installer to ensure the installer has and understands the manufacturer's installation requirements for all hardware items.
2. The Supplier shall observe the installation of the first lockset, closer, and exit device.

3.2 INSTALLATION

A. Mount hardware units at heights indicated in respective DHI Standards, except as specifically indicated, or required to comply with governing regulations, and except as may be otherwise directed by the Architect.

B. Install each hardware item in compliance with the manufacturer's instructions and recommendations. Wherever cutting and fitting is required to install hardware onto or into surfaces, which are later to be field, finished, coordinate removal, storage and reinstallation or application of surface protections with finishing work. Do not install surface-mounted items until finishes have been completed on substrate.

C. Set units level, plumb and true to line and location. Adjust and reinforce the attachments substrate as necessary for proper installation and operation.

D. Provide fasteners and anchoring devices of suitable size, quantity and type to secure hardware in proper position for heavy use and long life.

1. Drill and countersink unit, which are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

E. Adjust door closers immediately upon installation. Adjust in exact conformance with manufacturer's printed instructions. Advance backcheck to eliminate shock at dead stop. Set closer latching speed to assure unassisted positive latching.

1. Degree of swing of door for self-limiting closers shall be maximum available.

F. Adjust all exit devices immediately upon installation. Adjust in exact conformance with manufacturers' printed instructions.

G. Install each protection plate with a thinly spread of mastic at its center to assure even contact before fastening with screws. Install all such plates on visual center of closed doors. Set bottom edges of all such plates flush with door bottom.

H. Seal weather protection components attached to the exterior sides of doors and frames, such as drip caps and weather-stripping, in place with clear silicone caulk in such a manner as to ensure a continuously filled seam throughout the joinery.

I. Cut and fit weather-stripping accurately to provide the greatest possible continuity of the contact element. Adjust closer template as required.

3.3 ADJUST AND CLEAN

A. Adjust and check each operating item of hardware and each door, to ensure proper operation or function of every unit. Replace units, which cannot be adjusted to operate freely and smoothly as intended for the applications made.

B. Clean adjacent surfaces soiled by hardware installation.

C. Final Adjustment: Wherever hardware installation is made more than one month prior to acceptance or occupancy of a space or area, return to the work during the week prior to acceptance or occupancy, and make final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.

3.4 INSTRUCTIONS AND INSPECTION

A. Instruct Owner's personnel in proper adjustment and maintenance of hardware and hardware finishes, during the final adjustment of hardware.

B. After hardware is installed and adjusted, the Supplier shall inspect the job with the Architect and the Construction Manager to determine if the hardware is functioning properly.

1. Maintain the instruction sheets, layout templates, and any supplementary literature regarding hardware in a readable condition. Transmit all such items to the Owner's Representative, together with all spare parts, specialized tools, other accessories supplied with the hardware, and a copy of the approved hardware schedule at the time of instruction.

3.5 HARDWARE SCHEDULE

A. Refer PLANS for additional information. Door Hardware shall match facility existing in finish and type. Site verify requirements. Contractor to develop a more detailed hardware schedule as the basis for final purchases and installation. See “Door Hardware Notes” on A200.

END OF SECTION 087100

SECTION 088000 - GLAZING

PART 1 – GENERAL

1.1 DESCRIPTION

A. The work of this section shall consist of furnishing all materials, labor, equipment, tools, and incidentals necessary to complete all glass and glazing shown on the drawings and specified herein, including glass for all doors, storefront framing, fixed glass frames, clean-up and responsibility for glass breakage.

B. Related Sections include the following:
   a. Section 081113 “Hollow Metal Doors and Frames” for glazing in hollow metal doors.
   b. Section 081416 “Flush Wood Doors” for glazing in wood doors.
   c. Section 084113 “Aluminum-Framed Entrances and Storefronts” for glazing in aluminum storefront and storefront entrance doors.

1.2 SUBMITTALS

A. Product Data: Manufacturer’s specifications, recommendations for setting blocks, spacers and edge clearance, and installation instructions.

PART 2 –PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers: Vitro Architectural Glass, or approved substitute.

B. Substitutions: As approved by Architect. Refer to Section 012500.

2.2 MATERIALS

A. Tempered Glass: Comply with ASTM C1036 and further processed according to ASTM C1048, Kind FT, which has been fully tempered by the manufacturer’s standard horizontal process. Minimum thickness of 1/4-inches. Refer to “CODES” for tempered glass or safety glass locations.

B. Interior Insulated Glass Units: ASTM E774 and E773; double pane with glass elastomer edge seal; outer pane 1/4-inch Clear Glass, inner pane of 1/4-inch clear; inter pane space purged by dry air; total thickness of 1”; Warm-Edge spacer. IGCC class CBA rating.
   1. Outer Pane: 1/4-inch glass, Clear.
   2. Inner Pane: 1/4-inch glass, Clear.

C. Labels: Labels showing glass manufacturer's identity, type of glass, thickness, and quality shall be applied to each piece of glass. Labels must remain on glass until it has been set and approved.

D. Approved suppliers include:
   1. Oldcastle Glass Group
   2. AFG Industries
   3. Advanced Glass Systems Corp.

PART 3 – EXECUTION

3.1 DELIVERY AND STORAGE

A. Materials shall be delivered as required and shall be stored in a safe location as directed. Material shall not be unpacked until it is to be used.

3.2 INSTALLATION

A. All glazing shall be in accordance with manufacturer's instructions. All glass shall be accurately cut to fit openings and set with equal bearing on the entire width of pane. Convex side of glass shall be on outside. Upon completion, remove all dirt, stains, or excess putty; clean and polish all exposed work, including glass; and leave work in perfect condition.

B. All glazing and accessories shall be installed in accordance with Codes and Standards of the Industry.

END OF SECTION 088000

SECTION 088733 – DECORATIVE GLAZING FILM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes decorative glazing film assemblies applied to glass.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include glazing film and backing material descriptions.

B. Shop Drawings: Show elevations and details for each assembly.

C. Samples: Two sets of 12-inch square samples of each type of glazing film and color images of each item on 8-1/2-inch by 11-inch paper.

D. Operation and Maintenance Data: For decorative glazing film assemblies to include in maintenance manuals.

1.4 QUALITY ASSURANCE

A. Obtain all decorative glazing film assemblies from a single source.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products:

1. Decorative Glazing Film: Basis of Design shall be Decorative Films (decorativefilm.com), SX-1254-UG, Reeded Glass Film. Refer 2/A301 for location.
   a. Pre-approved equal. Refer Section 012500 for Substitution Procedures.

2.2 FABRICATORS

A. Fabricator shall have a minimum three years' experience in applying to substrates specified.

2.3 DECORATIVE GLAZING FILM

A. Decorative Glazing Film (WF-1): Frosted film. Apply directly to glazing where indicated on the Drawings. Install per manufacturer's requirements.
   a. Refer 2/A301 for location.
   b. Field verify for exact dimensions.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean all glass surfaces, free of debris, dust, and soil prior to installation of window film.

3.2 INSTALLATION

A. Frosted film to be installed per Drawings, free of air bubbles and from window mullions to window mullions.

END OF SECTION 088733

SECTION 090000 – FINISHES

1. GENERAL

Furnish all labor and materials necessary to completely install all interior finish materials, as shown on drawings or herein specified.

2. MATERIALS

2.1 CONCRETE:

STC-1 & STC-2: Stained Concrete. Refer Specification 033543.

2.2 TILE:

T-1: Porcelain Tile | Daltile 12” x 24” Volume 1.0 | Intensity Pebble Vl72 | Grid install at floor & vertical stack at wall. Grout to be TEC Epoxy in Light Pewter 927. Tile to concrete transition to be Schluter Reno-u, stainless steel.

T-2: Porcelain Tile | Daltile 12” x 24” Volume 1.0 | Degrees Silver Vl71 | Horizontal stack up to 7' AFF. Grout to be TEC Epoxy Silverado 949. Finish edges in Schulter Quadec, satin aluminum finish.

T-3 Ceramic Tile | Daltile 3” x 6” Color Wheel Classic in Garden Spot 0141 | Horizontal stack, 3/16" grout to be TEC Epoxy Light Pewter in 927.

T-4: Porcelain Tile | Tilebar | Hex-Art Pop Yellow 8" Hexagon Matte Tile. Grout to be TEC sanded grout in Bright White 910.

2.3 FLOOR COVERING:

FC-1: Floor covering (Rubber Sheet Flooring) | Nora | Noraplan Unita | 7103 Come-n-Go 2mm sheet good. See sheet A401 for nosing details.

FC-2: Floor covering (Walk Off Carpet) | Milliken | Cut / Thread Tile | TDC27-173 Grey.

2.5 RESILIENT WALL BASE:

RB-1: Resilient Base | Johnsonite | Traditional 4” Coved Vinyl Wall Base | Moon Rock DC-29-LOC-0.125" x 4". Install w/ outside corners.

2.6 PAINT:

P-1: Paint color | PPG Silvery Moon 1029-1.

P-2: Paint color | PPG Photo Gray 1029-4.

P-3: Paint color to match MSSU green. Confirm with Architect.

P-4: Paint color | PPG Dark Sage 1124-6

P-5: Paint color | PPG Balsam 1128-4

P-6: Paint color | PPG Moth Gray 1024-4.

P-7: Paint color | Sherwin Williams Greenblack SW 6994.

P-8 Specialty Wall Paint | Projector Screen Paint | 3D4K Silverish Light Grey with 2.4 Gain | projectorscreenstore.com | POS-G003D4K

Note: Sheen to be Eggshell on Gypsum and Masonry walls, and Satin on Metal.

2.8 PLASTIC LAMINATE:

PL-1: Plastic Laminate | Formica | Silver Riftwood 6413-NG.

Note: Fabricate doors, drawers, backsplashes, exposed interior surfaces with matching edge banding. Cabinet interiors to be white melamine. Locking hardware shall match cabinet hardware. Fabricator to designate correct grade for application.

2.9 ACRYLIC SOLID SURFACE:

AS-1: Acrylic Solid Surface | Formica Luna Concrete 781.

Note: Counters and worksurface substrate to be a maximum of 1-1/4" thick. Countertops shall have an eased edge. Fabricate to depth shown in details.

2.10 - FINISH CARPENTRY:

WD-1: Red Oak 1" x 6" board with linear grain. Finish with oil based Minwax True Black 274 stain & satin polyurethane.

WD-2: Red Oak A/C Plywood with linear grain. Finish with oil based Minwax True Black 274 stain & satin polyurethane.

2.11 VINYL WINDOW FILM:

WF -1: Decorative Glazing Film | Decorative Films | SX-1254-UG | Reeded Glass Film. Refer elevations.

2.12 VINYL WALL COVERING:

WC-1: Vinyl Wall Covering | Koroseal Digital | Block DK-GM0012-01 On Fine Texture DS0103 | Type II 20 Oz.

WC-2: Vinyl Wall Covering | MDC | Silk Road BB-SR-36 Grand Bazaar | Type II 20 Oz.

WC-3: Vinyl Wall Covering | Koroseal Digital | Awaken Valley | Kde-Awv-04 On Linen DS0100 | Type II 20 Oz.

WC-4: Vinyl Wall Covering | MDC | Formosa Fizz Desert Sun DDC2286 | Digital Curated Matte.

2.13 VINYL WALL DECAL:

VWG-1: Vinyl Wall Graphic shall be MSSU Lion head. Fabricator to coordinate with architect on scale, colors and MSSU brand guidelines. Provide interior film at 2 mil thickness with a matte over-laminate.

2.14 ACOUSTIC WALL PANELS:

AWP-1: Acoustic Wall Panel | Armstrong | Tectum Designart Lines Direct-Attach (D-20) Wall Panel | 24" x 48" x 1" Levels in Ivy | Bevel Short Side | 5421D54T10. Refer Elevations.

AFP-1 Acoustic Felt Panel | Kirei Ion Panel 110.2"H x 44.5"W X 0.35"D. Color as Selected from Standard Range. Refer Elevations.

AWT-1 Acoustic Wall Panel | Kirei 15-1/2"W x 7-3/4"H. Barcode Tile in Vineyard. Refer Elevations.

2.15 FURNISHINGS:

RS-1 Roller Shade | Draper Clutch Operated Flexshade | Stainless Steel Chain | Type D Shade Pocket | Light Gap Reduction Channels | Blackout Fabric Apagon Style III in Black/White.

3. INSTALLATION

Refer Manufacturers Guidelines and Product Data for Installation Procedures and Requirements.

4. SAMPLES

Finishes as specified in this section have been selected by the Owner. Provide samples as requested by Owner. All proposed substitutions shall be provided to the Architect for review with (3) samples.

5. CLEAN UP

At the completion of the work, all finishes shall be left in a clean and neat manner with debris removed. All stains and other foreign matter shall be cleaned from floors, trim, walls, and ceilings. Damaged materials shall be repaired / replaced at no additional cost to the Owner.

END OF SECTION 090000

SECTION 092216 – NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes non-load-bearing steel framing members for the following applications:

1. Interior framing systems (e.g., supports for partition walls, framed soffits, furring, etc.).
2. Interior suspension systems (e.g., supports for ceilings, suspended soffits, etc.).

B. Related Sections include the following:
1. Section 072100 "Thermal Insulation" for insulation installed within metal stud framing for sound control.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

1.4 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

PART 2 - PRODUCTS

2.1 NON-LOAD-BEARING STEEL FRAMING, GENERAL

A. Framing Members, General: Comply with ASTM C 754 for conditions indicated.

1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal, unless otherwise indicated.
2. Protective Coating: Coating with equivalent corrosion resistance of ASTM A 653/A 653M, G40 (Z120), hot-dip galvanized, unless otherwise indicated.

2.2 SUSPENSION SYSTEM COMPONENTS

A. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.0625-inch- (1.59-mm-) diameter wire, or double strand of 0.0475-inch- (1.21-mm-) diameter wire.

B. Hanger Attachments to Concrete:

1. Anchors: Fabricated from corrosion-resistant materials with holes or loops for attaching wire hangers and capable of sustaining, without failure, a load equal to 5 times that imposed by construction as determined by testing according to ASTM E 488 by an independent testing agency.

a. Type: Postinstalled, expansion anchor.

2. Powder-Actuated Fasteners: Suitable for application indicated, fabricated from corrosion-resistant materials with clips or other devices for attaching hangers of type indicated, and capable of sustaining, without failure, a load equal to 10 times that imposed by construction as determined by testing according to ASTM E 1190 by an independent testing agency.

C. Wire Hangers: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.162-inch (4.12-mm) diameter.

D. Carrying Channels: Cold-rolled, commercial-steel sheet with a base-metal thickness of 0.0538 inch (1.37 mm) and minimum 1/2-inch- (12.7-mm-) wide flanges.

1. Depth: 1-1/2 inches (38 mm), unless otherwise indicated.

E. Furring Channels (Furring Members):

1. Cold-Rolled Channels: 0.0538-inch (1.37-mm) bare-steel thickness, with minimum 1/2-inch- (12.7-mm-) wide flanges, 3/4 inch (19.1 mm) deep.
2. Steel Studs: ASTM C 645.

a. Minimum Base-Metal Thickness: 0.0312 inch (0.79 mm), unless otherwise indicated.
b. Depth: As indicated on Drawings.

3. Hat-Shaped, Rigid Furring Channels: ASTM C 645, 7/8 inch (22.2 mm) deep.

a. Minimum Base Metal Thickness: 0.0179 inch (0.45 mm), unless otherwise indicated.

F. Grid Suspension System for Ceilings: ASTM C 645, direct-hung system composed of main beams and cross-furring members that interlock.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Armstrong World Industries, Inc.; Drywall Grid Systems.
b. Chicago Metallic Corporation; 640-C and Fire Front 650-C Drywall Furring System.

c. USG Corporation; Drywall Suspension System.
d. Pre-approved equal.

2.3 STEEL FRAMING FOR FRAMED ASSEMBLIES

A. Steel Studs and Runners: ASTM C 645.

1. Minimum Base-Metal Thickness: 0.0312 inch (0.79 mm).
2. Depth: As indicated on Drawings.

B. Hat-Shaped, Rigid Furring Channels: ASTM C 645.

1. Minimum Base Metal Thickness: 0.0179 inch (0.45 mm).
2. Depth: 7/8 inch (22.2 mm), unless otherwise indicated.

C. Z-Shaped Furring: With slotted or nonslotted web, face flange of 1-1/4 inches (31.8 mm), wall attachment flange of 7/8 inch (22.2 mm), minimum bare-metal thickness of 0.0179 inch (0.45 mm), and depth required to fit insulation thickness indicated.

2.4 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards.

1. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

B. Isolation Strip at Exterior Walls: Provide one of the following:

1. Asphalt-Saturated Organic Felt: ASTM D 226, Type I (No. 15 asphalt felt), nonperforated.
2. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch (3.2 mm) thick, in width to suit steel stud size.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance.

1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Suspended Assemblies: Coordinate installation of suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive hangers at spacing required to support the Work and that hangers will develop their full strength.

1. Furnish concrete inserts and other devices indicated to other trades for installation in advance of time needed for coordination and construction.

3.3 INSTALLATION, GENERAL

A. Installation Standard: ASTM C 754, except comply with framing sizes and spacing indicated.

1. Gypsum Board Assemblies: Also comply with requirements in ASTM C 840 that apply to framing installation.

B. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.

C. Install bracing at terminations in assemblies.

D. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

3.4 INSTALLING SUSPENSION SYSTEMS

A. Install suspension system components in sizes and spacings indicated on Drawings, but not less than those required by referenced installation standards for assembly types and other assembly components indicated.

B. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.

C. Suspend hangers from building structure as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.

a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.

2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.

a. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced installation standards.

3. Wire Hangers: Secure by looping and wire tying, either directly to structures or to inserts, eye screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause hangers to deteriorate or otherwise fail.
4. Do not attach hangers to steel roof deck.
5. Do not attach hangers to permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.
6. Do not attach hangers to rolled-in hanger tabs of composite steel floor deck.
7. Do not connect or suspend steel framing from ducts, pipes, or conduit.

D. Seismic Bracing: Sway-brace suspension systems with hangers used for support.

E. Grid Suspension Systems: Attach perimeter wall track or angle where grid suspension systems meet vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track.

F. Installation Tolerances: Install suspension systems that are level to within 1/8 inch in 12 feet (3 mm in 3.6 m) measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

3.5 INSTALLING FRAMED ASSEMBLIES

A. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.

B. Install studs so flanges within framing system point in same direction.

1. Space studs as follows:

a. Single-Layer Application: 16 inches o.c., unless otherwise indicated.

C. Install tracks (runners) at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts penetrating partitions above ceiling.

1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.

a. Install two studs at each jamb, unless otherwise indicated.
b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch (12.7-mm) clearance from jamb stud to allow for installation of control joint in finished assembly.
c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.

3. Other Framed Openings: Frame openings other than door openings the same as required for door openings, unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.

D. Z-Furring Members:

1. Erect insulation specified in Section 072100 "Thermal Insulation" vertically and hold in place with Z-furring members spaced 24 inches o.c.
2. Except at exterior corners, securely attach narrow flanges of furring members to wall with concrete stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches (600 mm) o.c.
3. At exterior corners, attach wide flange of furring members to wall with short flange extending beyond corner; on adjacent wall surface, screw-attach short flange of furring channel to web of attached channel. At interior corners, space second member no more than 12 inches (300 mm) from corner and cut insulation to fit.

E. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch (3 mm) from the plane formed by faces of adjacent framing.

END OF SECTION 092216

SECTION 092900 – GYPSUM BOARD

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Interior Gypsum Board
2. Gypsum Ceiling Board.
3. Trim Accessories
4. Joint Treatment Materials

B. Related Requirements:

1. Section 09 91 23 “Interior Painting.”
2. Section 07 92 00 “Joint Sealants”.
3. Section 07 21 00 “Thermal insulation”.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.4 DELIVERY, STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.5 FIELD CONDITIONS

A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

2.2 GYPSUM BOARD, GENERAL

A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.3 MANUFACTURER

A. Acceptable Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. American Gypsum Co.
2. CertainTeed Corporation.
3. Georgia-Pacific Gypsum LLC.
4. National Gypsum Company.
5. Temple-Inland.
6. USG Corporation.

2.4 INTERIOR GYPSUM BOARD MATERIALS

A. Gypsum Board, Type X: ASTM C 1396/C 1396M.

1. Thickness: 5/8 inch (15.9 mm).
2. Long Edges: Tapered.

B. Gypsum Ceiling Board: ASTM C 1396/C 1396M.

1. Thickness: [1/2 inch (12.7 mm)] [5/8 inch (15.9 mm).]
2. Long Edges: Tapered.
3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.5 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.

1. Material: Galvanized or aluminum-coated steel sheet or rolled zinc.
2. Shapes:

a. Cornerbead.
b. Bullnose bead.
c. LC-Bead: J-shaped; exposed long flange receives joint compound.
d. L-Bead: L-shaped; exposed long flange receives joint compound.
e. U-Bead: J-shaped; exposed short flange does not receive joint compound.
f. Expansion (control) joint.
g. 1/2-inch “F” Reveal; Fry Reglet.

2.6 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475/C 475M.

B. Joint Tape:

1. Interior Gypsum Board: Paper.

C. Joint Compound for Interior Gypsum Board: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.

1. Prefilling: At open joints or beveled panel edges, and damaged surface areas, use setting-type taping compound.
2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.

a. Use setting-type compound for installing paper-faced metal trim accessories.

3. Fill Coat: For second coat, use setting-type, sandable topping compound.
4. Finish Coat: For third coat, use setting-type, sandable topping compound.
5. Skim Coat: For final coat of Level 5 finish, use setting-type, sandable topping compound.
6. Level 5 finish.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates including welded hollow-metal frames and framing, with Installer present, for compliance with requirements and other conditions affecting performance.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLYING AND FINISHING PANELS, GENERAL

A. Comply with ASTM C 840.

B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch (1.5 mm) of open space between panels. Do not force into place.

D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

E. Form control and expansion joints with space between edges of adjoining gypsum panels.

F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.

1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. (0.7 sq. m) in area.
2. Fit gypsum panels around ducts, pipes, and conduits.
3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- (6.4- to 9.5-mm-) wide joints to install sealant.

G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- (6.4- to 12.7-mm-) wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

3.3 APPLYING INTERIOR GYPSUM BOARD

A. Install interior gypsum board in the following locations:

1. Wallboard Type: As indicated on Drawings.
2. Type X: As indicated on Drawings.
3. Ceiling Type: At ceilings and soffits.

B. Single-Layer Application:

1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
2. On partitions/walls, apply gypsum panels horizontally (perpendicular to framing) unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.

    a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
    b. At high walls, install panels horizontally unless otherwise indicated or required by fire-resistance-rated assembly.

3. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
4. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

3.4 INSTALLING TRIM ACCESSORIES

A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

B. Control Joints: Install control joints according to ASTM C 840 and in specific locations approved by Architect for visual effect.

C. Interior Trim: Install in the following locations:

1. Cornerbead: Use at outside corners unless otherwise indicated.
2. LC-Bead: Use at exposed panel edges.
3. L-Bead: Use where indicated.

3.5 FINISHING GYPSUM BOARD

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joints, rounded or beveled edges, and damaged surface areas.

C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

D. Gypsum Board Finish Levels: Finish panels to Level 4. Install Level 5 at Theater Projection Wall (6/A300) – at entire projection wall surface, coordinate with Architect for clarification if needed.

3.6 PROTECTION

A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

C. Remove and replace panels that are wet, moisture damaged, and mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 092900

SECTION 093012 – CERAMIC TILE

1. GENERAL

1.1 Description: The work of this section shall consist of furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the installation of ceramic floor and wall tile as shown on the drawings and specified herein.

2. MATERIALS

2.1 CERAMIC TILE

2.1.1 Ceramic glazed wall tiles shall be as specified in Specification Section 090000, FINISHES.

2.2 Portland Cement: Portland Cement shall conform to the Standard Specifications of the ASTM C150, Type 1, latest edition. White Portland Cement shall be in conformity with U.S. Government Federal Specifications, SS-C-181, latest edition. Portland or White Portland Cement shall be standard product, name of which shall be submitted to the Architect for approval.

2.3 Hydrated Lime: Hydrated lime shall conform to the Standard Specifications for the ASTM C6, latest edition. Quick lime shall conform to the Standard Specifications of the ASTM C5, latest edition.

2.4 Sand: Sand shall conform to the requirements of ASTM C-144.

2.5 Water: Mixing water shall be fresh, clean, and potable.

2.6 Setting Materials: Shall be as approved by Architect and compatible to which it is applied.

2.6.1 Portland Cement Mortar and Grout: ANSI A108.1.

2.6.2 Latex-Portland Cement Mortar (Latex modified Portland cement dry-set mortar) ANSI A118.4.

2.7 Grout Materials: Shall be types as recommended in the Grout Specification Guide published on page 10 of the Tile Council of America "Handbook for Ceramic Tile Installation" and by specific manufacturer's brand.

2.7.1 Commercial Cement Grout

2.7.2 Dry Set Grout

2.7.3 Sand-Portland Cement Grout

2.7.4 Latex-Portland Cement Grout

2.7.5 Grout: Grout shall be a commercial, epoxy type as recommended by tile manufacturer. Refer 090000 FINISHES for scheduled grout type and locations. Wall tile grout shall be unsanded with joints at 1/16” wide or as recommended by Manufacturer.

2.7.6 Grout Sealer: Grout shall be sealed with ChemRex, Masterseal Surface Guard or equal according to manufacturer’s written instructions.

2.7.7 Grout color(s) shall be as selected by Architect.

3. ACTION SUBMITTALS

3.1 Product Data: For each type of product.

3.2 Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.

3.3 Samples for Initial Selection: For tile, grout, and accessories involving color selection.

3.4 Samples for Verification:

a. Full-size units of each type and composition of tile and for each color and finish required.

b. Full-size units of each type of trim and accessory for each color and finish required.

c. Metal edge strips in 6-inch lengths.

4. EXECUTION

4.1 Submittals: One sample tile for each color, pattern and type shall be submitted to the Architect.

4.2 Delivery and Handling: All materials shall be delivered to the job site in the manufacturer's unopened containers with grade seals unbroken and labels intact. The containers shall be kept dry at all times. An extra two percent supply of the tile used shall be provided in clean, marked containers

4.3 Acceptability of Surfaces: The maximum variations of the surface to be tiled shall be less than 1/4 inch in ten feet. All unacceptable surfaces shall be reported to the Architect, and no tile shall be placed on such surfaces until they are leveled. All surfaces to be tiled shall be free from all oil, grease, wax, and dust.

4.4 Layout: All time work shall be laid out so as to minimize cuts of less than one-half tile size. Cuts shall be located so as to be least conspicuous. All floor joints shall be aligned to give straight, uniform grout lines, parallel with the walls.

4.5 Workmanship: All products shall be used in strict accordance with the recommendations and instructions of the manufacturer. All mixes shall be proportioned in accordance with the latest ANSI Standard Specifications. Upon completion, all tile work shall be cleaned of grout film.

4.6 Environmental Conditions: A minimum temperature of 50 degrees F. shall be maintained during tile work and for seven days after completion. Temporary heaters, if used, shall be vented to the outside to avoid carbon dioxide damage to the new tile work. Adequate grouting shall be provided for good grouting and clean-up.

4.7 Setting Methods: The method of "thin-set" setting tile shall conform to the requirements of ANSI sections as listed in paragraph 2.7; Tile Council of America "Handbook" standards F114-94 (cement mortar epoxy grout on mortar bed at floors) and W202-94 (Dry-set at walls). Where ceramic tile or pavers are laid over concrete expansion joints or sawed joints, furnish and install FLEX GUARD ANTI-FRACTURE SHEETING prior to laying tile. Install per manufacturer's written directions.

4.8 Grouting: Grout manufacturer's recommendations and precautions shall be strictly followed during grouting of tile work. All grout haze shall be removed while observing the grout manufacturer's recommendations as to the use of acid and chemical cleaners. All tile work shall be rinsed thoroughly with clean water before and after using chemical cleaners.

4.9 Protection: A protective coat of neutral cleaner solution, one part cleaner to one part water, shall be applied to all clean, completed tile work, over which a heavy duty, nonstaining construction paper shall be masked in place. The construction paper shall be removed and the neutral cleaner rinsed away just prior to final inspection. The tile work shall not be subjected to foot or wheel traffic for at least three days, preferably seven days, after completion of the laying. If use of the tile work is unavoidable, large, flat, boards shall be placed in the walkway for seven days.

4.10 Installation shall be in accordance with manufacturer's written specifications and the Tile Council of America Handbook, "Handbook for Ceramic Tile Installation.

END OF SECTION 093012

SECTION 093013 – PORCELAIN TILE

1. GENERAL
   1.1 SECTION INCLUDE
      A. Tile and Accessories:
         1. Glazed and ColorBody Porcelain.
         2. Trim and Accessories.
         3. Setting Materials.

   1.2 RELATED SECTIONS
      A. Section 079200 – Joint Sealants
      B. Section 090000 – Finishes

   1.3 REFERENCES
      A. American National Standards Institute (ANSI):
         1. ANSI A108.1A - Specifications for Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar.
         2. ANSI A108.1B - Specifications for Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex Portland Cement Mortar
         3. ANSI A108.1C - Specifications for Contractors Option: Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar -or- Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex Portland Cement Mortar.
         4. ANSI A108.4 - Specifications for Ceramic Tile Installed with Organic Adhesives or Water-Cleanable Tile Setting Epoxy Adhesive.
         5. ANSI A108.5 - Specifications for Ceramic Tile Installed with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar.
         6. ANSI A108.6 - Specifications for Ceramic Tile Installed with Chemical-Resistant, Water-Cleanable Tile-Setting and -Grouting Epoxy.
         7. ANSI A108.8 - Specifications for Ceramic Tile Installed with Chemical-Resistant Furan Mortar and Grout.
         8. ANSI A108.9 - Specifications for Ceramic Tile Installed with Modified Epoxy Emulsion Mortar/Grout.
         9. ANSI A108.10 - Specifications for Installation of Grout in Tilework.
         10. ANSI A118.1 - Standard Specification for Dry-Set Portland Cement Mortar.
         11. ANSI A118.3 - Chemical-Resistant, Water-Cleanable, Tile-Setting and -Grouting Epoxy and Water-Cleanable Tile-Setting Epoxy Adhesive.
         12. ANSI A118.4 - Latex-Portland Cement Mortar.
         13. ANSI A118.5 - Chemical-Resistant Furan Mortar and Grout.
         14. ANSI A118.6 - Standard Ceramic Tile Grouts.
         15. ANSI A118.7 - Polymer Modified Cement Grouts
         16. ANSI A118.8 - Modified Epoxy Emulsion Mortar/Grout.
         17. ANSI A118.9 - Test Methods and Specifications for Cementitious Backer Units
         18. ANSI A118.10 - Load bearing, Bonded, Waterproof Membranes for Thinset Ceramic Tile and Dimensional Stone.
         19. ANSI A118.11 - Exterior Grade Plywood (EGP) Latex-Portland Cement Mortar.
         20. ANSI A136.1 - Organic Adhesives for Installation of Ceramic Tile.
         21. ANSI A137.1 - Specifications for Ceramic Tile.

B. ASTM International (ASTM):

1. ASTM C 50 - Standard Practice for Sampling, Sample Preparation, Packaging, and Marking of Lime and Limestone Products.
2. ASTM C 144 - Standard Specification for Aggregate for Masonry Mortar.
3. ASTM C 207 - Standard Specification for Hydrated Lime for Masonry Purposes.
4. ASTM C 241 - Standard Test Method For Abrasion Resistance of Stone Subjected to Foot Traffic.
5. ASTM C 503 - Standard Specification for Marble Dimension Stone.
6. ASTM C 615 - Standard Specification for Granite Dimension Stone.
7. ASTM C 629 - Standard Specification for Slate Dimension Stone.
8. ASTM C 847 - Standard Specification for Metal Lath.
9. ASTM C 1028 - Standard Test method for Determining the Static Coefficient of Friction Or Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull meter Method.
10. ASTM D 4397 - Standard Specification for Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications.

C. Tile Council of North America (TCNA): TCA Handbook for Ceramic Tile Installation, 2007.

1.4 PERFORMANCE REQUIREMENTS

A. Static Coefficient of Friction: Tile on walkway surfaces shall be provided with the following values as determined by testing in conformance with ASTM C 1028.

1. Level Surfaces: Minimum of 0.6 (Wet).
2. Step Treads: Minimum of 0.6 (Wet).
3. Ramp Surfaces: Minimum of 0.8 (Wet).

1.5 SUBMITTALS

A. Submit under provisions of Specifications.

B. Product Data: Manufacturer's data sheets on each product to be used, including:

1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.

C. Shop Drawings: Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, control and expansion joints, thresholds, ceramic accessories, and setting details.

D. Selection Samples: Color charts illustrating full range of colors and patterns.

E. Selection Samples: Samples of actual tiles for selection.

F. Maintenance Data: Include recommended cleaning methods, cleaning materials, stain removal methods, and polishes and waxes.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing the work of this section with minimum five (5) years' experience.

B. Single Source Responsibility: Obtain each type and color of tile from a single source. Obtain each type and color of mortar, adhesive and grout from the same source.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store products in manufacturer's unopened packaging until ready for installation.

B. Protect adhesives and liquid additives from freezing or overheating in accordance with manufacturer's instructions.

C. Store tile and setting materials on elevated platforms, under cover and in a dry location and protect from contamination, dampness, freezing or overheating.

1.8 EXTRA MATERIALS

A. Provide for Owner's use a minimum of 2 percent of the primary sizes and colors of tile specified, boxed and clearly labeled.

2. PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Refer 090000 Finishes for selections.

B. Requests for substitutions will be considered in accordance with provisions in the General Conditions.

2.2 TILE

A. General: Provide tile that complies with ANSI A137.1 for types, compositions and other characteristics indicated. Provide tile in the locations and of the types colors and pattern indicated on the Drawings and identified in the Schedule and 090000 Finishes. Tile shall also be provided in accordance with the following:

1. Factory Blending: For tile exhibiting color variations within the ranges selected under Submittal of samples, blend tile in the factory and package so tile taken from one package shows the same range of colors as those taken from other packages.
2. Mounting: For factory mounted tile, provide back or edge mounted tile assemblies as standard with the manufacturer, unless otherwise specified.
3. Factory Applied Temporary Protective Coatings: Where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by precoating with a continuous film of petroleum paraffin wax applied hot. Do not coat unexposed tile surfaces.
4. Refer to Floor Finish Plan and Section 090000 for pattern and tile finish.

B. Porcelain Tile (base, floor and wall):

1. Product: porcelain tile
2. Moisture Absorption: Less than .5 percent to less than 20 percent.
3. Size and Shape: Refer to Section 090000
4. Surface Finish: Refer to Section 090000
5. Colors: Refer to Section 090000
6. Pattern: Refer to Section 090000

Trim Units: incorporate Schluter systems as noted in Finish Schedule & Details.

2.3 SETTING MATERIALS:

A. Mortar Bed Materials:

1. Portland cement: ASTM C150, type 1, gray or white.
2. Hydrated Lime: ASTM C207, Type S.
3. Sand: ASTM C144, fine.
4. Latex additive: As approved.
5. Water: Clean and potable.

B. Mortar Bond Coat Materials:

1. Dry-Set Portland Cement type: ANSI A118.1.
2. Latex-Portland Cement type: ANSI A118.4.
3. Epoxy: ANSI A118.3, 100 percent solids.

C. Epoxy grout, as specified in ANSI A118.7 and as indicated in 090000 FINISHES.

1. Use manufacturer recommended grout release for dark colored grout.

3. EXECUTION

3.1 EXAMINATION

A. Verify that sub-floor surfaces are dust-free, and free of substances which would impair bonding of setting materials to sub-floor surfaces, and are smooth and flat within tolerances specified in ANSI A137.1.

B. Verify that concrete sub-floor surfaces are ready for tile installation by testing for moisture emission rate and alkalinity; obtain instructions if test results are not within limits recommended by tile manufacturer and setting materials manufacturer.

C. Verify that required floor-mounted utilities are in correct location.

3.2 PREPARATION

A. Protect surrounding work from damage.

B. Remove any curing compounds or other contaminates.

C. Vacuum clean surfaces and damp clean.

D. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.

E. Prepare substrate surfaces for adhesive installation in accordance with adhesive manufacturer's instructions.

3.3 INSTALLATION – GENERAL

A. Install tile and grout in accordance with applicable requirements of ANSI A108.1 through A108.13, manufacturer's instructions, and TCA Handbook recommendations.

B. Lay tile to pattern indicated. Arrange pattern so that a full tile or joint is centered on each wall and that no tile less than 1/2 width is used. Do not interrupt tile pattern through openings.

C. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make joints watertight, without voids, cracks, excess mortar, or excess grout.

D. Keep expansion joints free of adhesive or grout. Apply sealant to joints.

E. Allow tile to set for a minimum of 48 hours prior to grouting.

F. Grout tile joints. Use standard grout unless otherwise indicated.

G. Apply sealant to junction of tile and dissimilar materials and junction of dissimilar planes.

3.4 INSTALLATION - FLOORS - THIN-SET METHODS

A. Over interior concrete substrates, install in accordance with TCA Handbook Method F113, dry-set or latex-portland cement bond coat, with standard grout, unless otherwise indicated.

1. Where waterproofing membrane is indicated, install in accordance with TCA Handbook Method F122, with latex-portland grout.
2. Where epoxy bond coat and grout are indicated, install in accordance with TCA Handbook Method F143.

3.5 CLEANING

A. Clean tile and grout surfaces.

3.6 PROTECTION OF FINISHED WORK

A. Do not permit traffic over finished floor surface for 72 hours after installation.

B. Cover floors with kraft paper and protect from dirt and residue from other trades.

C. Where floor will be exposed for prolonged periods cover with plywood or other similar type walkways.

END OF SECTION 093013

SECTION 095113 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes acoustical panels and exposed suspension systems for interior ceilings.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples for Initial Selection: For components with factory-applied finishes.

C. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of sizes indicated below:

1. Acoustical Panels: Set of 6-inch- (150-mm-) square Samples of each type, color, pattern, and texture.
2. Exposed Suspension-System Members, Moldings, and Trim: Set of 6-inch- (150-mm-) long Samples of each type, finish, and color.

1.4 COORDINATION

A. Coordinate layout and installation of acoustical panels and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For finishes to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Acoustical Ceiling Units: Full-size panels equal to 2 percent of quantity installed.

2. Suspension-System Components: Quantity of each exposed component equal to 2 percent of quantity installed.
3. Hold-Down Clips: Equal to 2 percent of quantity installed.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical panels, suspension-system components, and accessories to Project site and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.

1.8 FIELD CONDITIONS

A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain each type of acoustical ceiling panel and its supporting suspension system from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: Class A according to ASTM E 1264.
2. Smoke-Developed Index: 50 or less.

B. Fire-Resistance Ratings: Comply with ASTM E 119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Indicate design designations from UL or from the listings of another qualified testing agency.

2.3 ACOUSTICAL PANELS (ACT-1)

A. Basis-of-Design Product: Subject to compliance with requirements, provide Armstrong World Industries, Inc; Ultima or a comparable product by one of the following:

1. United States Gypsum Company
2. Pre-approved substitute

B. Acoustical Panel Standard: Provide manufacturer's standard panels according to ASTM E 1264 and designated by type, form, pattern, acoustical rating, and light reflectance unless otherwise indicated.

C. Color: Basic White.

D. Light Reflectance (LR): Not less than 0.85.

E. Ceiling Attenuation Class (CAC): Not less than 35.

F. Noise Reduction Coefficient (NRC): Not less than 0.75.

G. Edge/Joint Detail: Square Tegular

H. Thickness: 3/4 inch (19 mm).

I. Modular Size: 24 by 24 inches.

J. Antimicrobial Treatment: Manufacturer's standard broad spectrum, antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D 3273, ASTM D 3274, or ASTM G 21 and evaluated according to ASTM D 3274 or ASTM G 21.

2.4 ACOUSTICAL FELT PANEL (AFP-1)

A. Basis-of-Design Product: Subject to compliance with requirements, provide KIREI; Ion Panel 110.2”H x 44.5”W x 0.35”D or a comparable product by one of the following:
1. Pre-approved substitute

B. Finish: Color as selected from Manufacturer’s standard range.

2.5 ACOUSTICAL CEILING PANEL (ACP-1)

A. Basis-of-Design Product: Subject to compliance with requirements, provide Armstrong World Industries, Inc; Tectum Designart Lines or a comparable product by one of the following:
1. Pre-approved substitute

B. 24” x 48” x 1” Levels in Ivy; 6348D54T10-TIV

C. Suspension system and perimeter trim to be painted to match “Ivy”.

2.6 ACOUSTICAL CEILING PANEL (ACP-1.1)

A. Basis-of-Design Product: Subject to compliance with requirements, provide Armstrong World Industries, Inc; Tectum High NRC Tegular Ceiling Panel or a comparable product by one of the following:
   1. Pre-approved substitute

B. 24” x 48”; 5339W2L04T10-TIV

2.7 ACOUSTICAL CEILING PANELS (ACP-2)

A. Basis-of-Design Product: Subject to compliance with requirements, provide Armstrong World Industries, Inc; Lyra PB 8382 tegular panels or a comparable product by one of the following:

   1. United States Gypsum Company
   2. Pre-approved substitute

B. Acoustical Panel Standard: Provide manufacturer's standard panels according to ASTM E 1264 and designated by type, form, pattern, acoustical rating, and light reflectance unless otherwise indicated.

C. Color: Toffee Chestnut (Wood Look; WTC)

D. Edge Profile: Square Tegular 9/16” for interface with Suprafine XL 9/16”

E. Thickness: 1 inch.

F. Modular Size: 24” x 48”

G. Suspension System: Suprafine XL 9/16” in “Oat”; SOT

H. Suspension System and perimeter Axiom trim to be painted Sherwin Williams SW7519

2.8 METAL SUSPENSION SYSTEMS, GENERAL

A. Metal Suspension-System Standard: Provide manufacturer's standard, direct-hung, metal suspension system and accessories according to ASTM C 635/C 635M and designated by type, structural classification, and finish indicated.

B. Finishes and Colors, General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes. Provide manufacturer's standard factory-applied finish for type of system indicated.

2.9 METAL SUSPENSION SYSTEM

A. Basis-of-Design Product: Subject to compliance with requirements, provide Armstrong World Industries, Inc; Suprafine XL 9/16-inch or comparable product by one of the following:

   1. Chicago Metallic Corporation.

2. United States Gypsum Company.

B. Wide-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; prepainted, electrolytically zinc coated, or hot-dip galvanized, G30 (Z90) coating designation; with prefinished 15/16-inch- (24-mm-) wide metal caps on flanges.

1. Structural Classification: Heavy-duty system.
2. End Condition of Cross Runners: Butt-edge type.
3. Face Design: Flat, flush.
4. Cap Material: Cold-rolled steel.
5. Cap Finish: Painted white.

2.10 ACCESSORIES

A. Attachment Devices: Size for five times the design load indicated in ASTM C 635/C 635M, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.

1. Anchors in Concrete: Anchors of type and material indicated below, with holes or loops for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to five times that imposed by ceiling construction, as determined by testing according to ASTM E 488/E 488M or ASTM E 1512 as applicable, conducted by a qualified testing and inspecting agency.

   a. Type: Postinstalled expansion anchors.
   b. Corrosion Protection: Carbon-steel components zinc plated according to ASTM B 633, Class SC 1 (mild) service condition.

2. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing according to ASTM E 1190, conducted by a qualified testing and inspecting agency.

B. Wire Hangers, Braces, and Ties: Provide wires as follows:

1. Zinc-Coated, Carbon-Steel Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper.
2. Stainless-Steel Wire: ASTM A 580/A 580M, Type 304, nonmagnetic.
3. Size: Wire diameter sufficient for its stress at three times hanger design load (ASTM C 635/C 635M, Table 1, "Direct Hung") will be less than yield stress of wire, but not less than 0.135-inch- (3.5-mm-) diameter wire.
4. Aircraft Cable: 1/32 inch with crimped connectors.

C. Hanger Rods: Mild steel, zinc coated or protected with rust-inhibitive paint.

D. Hold-Down Clips: Manufacturer's standard hold-down.

2.11 METAL EDGE MOLDINGS AND TRIM

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Armstrong World Industries, Inc.
2. Chicago Metallic Corporation.
3. United States Gypsum Company.

B. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension-system runners.

1. Edge moldings shall fit acoustical panel edge details and suspension systems indicated and match width and configuration of exposed runners unless otherwise indicated.
2. For lay-in panels with reveal edge details, provide stepped edge molding that forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member.
3. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.

B. Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders unless otherwise indicated, and comply with layout shown on reflected ceiling plans.

B. Layout openings for penetrations centered on the penetrating items.

3.3 INSTALLATION

A. Install acoustical panel ceilings according to ASTM C 636/C 636M and manufacturer's written instructions.

B. Suspend ceiling hangers from building's structural members and as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
4. Secure wire hangers to ceiling-suspension members and to supports above with a minimum of three tight turns. Connect hangers directly to structure or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
5. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both the structure to which hangers are attached and the type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
6. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
7. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
8. Do not attach hangers to steel deck tabs.
9. Do not attach hangers to steel roof deck. Attach hangers to structural members.
10. Space hangers not more than 48 inches (1200 mm) o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches (200 mm) from ends of each member.
11. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.

C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or postinstalled anchors.

D. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.

1. Screw attach moldings to substrate at intervals not more than 16 inches (400 mm) o.c. and not more than 3 inches (75 mm) from ends. Miter corners accurately and connect securely.
2. Do not use exposed fasteners, including pop rivets, on moldings and trim.

E. Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.

F. Install acoustical panels with undamaged edges and fit accurately into suspension-system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide precise fit.

1. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension-system runners and moldings.
2. For reveal-edged panels on suspension-system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.
3. For reveal-edged panels on suspension-system members with box-shaped flanges, install panels with reveal surfaces in firm contact with suspension-system surfaces and panel faces flush with bottom face of runners.
4. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.
5. Install hold-down clips in areas indicated; space according to panel manufacturer's written instructions unless otherwise indicated.

a. Hold-Down Clips: Space 24 inches (610 mm) o.c. on all cross runners.

3.4 ERECTION TOLERANCES

A. Suspended Ceilings: Install main and cross runners level to a tolerance of 1/8 inch in 12 feet (3 mm in 3.6 m), non-cumulative.

B. Moldings and Trim: Install moldings and trim to substrate and level with ceiling suspension system to a tolerance of 1/8 inch in 12 feet (3 mm in 3.6 m), non-cumulative.

3.5 CLEANING

A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension-system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage.
B. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 095113

SECTION 096513 – RESILIENT BASE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Thermoset rubber base.
2. Rubber molding accessories.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples for Initial Selection: For each type of product indicated.

C. Samples for Verification: For each type of product indicated and for each color, texture, and pattern required in manufacturer's standard-size Samples, but not less than 12 inches (300 mm) long.

D. Product Schedule: For resilient base and accessory products. Use same designations indicated on Drawings.

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Furnish not less than 10 linear feet (3 linear m) for every 500 linear feet (150 linear m) or fraction thereof, of each type, color, pattern, and size of resilient product installed.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F (10 deg C) or more than 90 deg F (32 deg C).

1.6 FIELD CONDITIONS

A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F (21 deg C) or more than 95 deg F (35 deg C), in spaces to receive resilient products during the following periods:

1. 48 hours before installation.
2. During installation.
3. 48 hours after installation.

B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F (13 deg C) or more than 95 deg F (35 deg C).

C. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 THERMO-SET RUBBER BASE

A. Basis-of-Design Product: Subject to compliance with requirements, provide Johnsonite; Traditional Vinyl Base.
1. Substitutions: As approved by Architect. Refer Section 012500.

B. Profile: Coved – Refer 090000 for additional information

C. Thickness: 0.125 inch (3.2 mm).

D. Height: 4 inches (102 mm)

E. Lengths: Coils in manufacturer's standard length.

F. Outside Corners: Job formed.

G. Inside Corners: Job formed.

H. Colors: Refer 090000 for selected colors.

2.2 RUBBER MOLDING ACCESSORY

A. Basis-of-Design Product: Subject to compliance with requirements, provide Johnsonite;
1. Substitutions: As approved by Architect. Refer Section 012500.

B. Profiles: As required for transitions.

2.3 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.

C. Floor Polish: Provide protective, liquid floor-polish products recommended by resilient stair-tread manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

1. Installation of resilient products indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

B. Concrete Substrates for Resilient Stair Accessories: Prepare horizontal surfaces according to ASTM F 710.

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than 9 pH.
4. Moisture Testing: Perform tests so that each test area does not exceed 200 sq. ft. (18.6 sq. m), and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

a. Anhydrous Calcium Chloride Test: ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. (1.36 kg of water/92.9 sq. m) in 24 hours.
b. Relative Humidity Test: Using in-situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.

C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

D. Do not install resilient products until materials are the same temperature as space where they are to be installed.

1. At least 48 hours in advance of installation, move resilient products and installation materials into spaces where they will be installed.

E. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

3.3 RESILIENT BASE INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient base.

B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.

D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

E. Do not stretch resilient base during installation.

F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.

3.4 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.

B. Perform the following operations immediately after completing resilient-product installation:

1. Remove adhesive and other blemishes from surfaces.
2. Sweep and vacuum horizontal surfaces thoroughly.
3. Damp-mop horizontal surfaces to remove marks and soil.

C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.

D. Floor Polish: Remove soil, adhesive, and blemishes from resilient stair treads before applying liquid floor polish. Apply finish coats as recommended by manufacturer.

E. Cover resilient products subject to wear and foot traffic until Substantial Completion.

END OF SECTION 096513

SECTION 096516 – RUBBER SHEET FLOORING

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.2 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials, and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Resilient sheet flooring for commercial traffic.

B. References (Industry Standards):

1. American Association of Textile Chemists and Colorists (AATCC):
   a. AATCC 134 Electrostatic Propensity of Carpets
2. American National Standards Institute (ANSI):
   b. ANSI ESD STM97.2 Floor Materials and Footwear – Voltage Measurement on a Person
3. ASTM International (ASTM):
   a. ASTM C518 Standard Test Method for Steady State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
   b. ASTM D412 Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension
   c. ASTM D2047 Standard Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine
   d. ASTM D2240 Standard Test Method for Rubber Property—Durometer Hardness
   e. ASTM D3389 Standard Test Method for Coated Fabrics Abrasion Resistance (Rotary Platform Abrader)
   f. ASTM D6499 Standard Test Method for the Immunological Measurement of Antigenic Protein in Hevea Natural Rubber (HNR) and its Products
   g. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials

h. ASTM E492	Standard Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine
i. ASTM E648	Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source
j. ASTM E662	Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials
k. ASTM E1745	Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs
l. ASTM E2179	Standard Test Method for Laboratory Measurement of the Effectiveness of Floor Coverings in Reducing Impact Sound Transmission Through Concrete Floors
m. ASTM E2180	Standard Test Method for Determining the Activity of Incorporated Antimicrobial Agent(s) in Polymeric or Hydrophobic Materials
n. ASTM F150	Standard Test Method for Electrical Resistance of Conductive and Static Dissipative Resilient Flooring
o. ASTM F386	Standard Test Method for Thickness of Resilient Flooring Materials Having Flat Surfaces
p. ASTM F710	Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
q. ASTM F925	Standard Test Method for Resistance to Chemicals of Resilient Flooring
r. ASTM F970	Standard Test Method for Measuring Recovery Properties of Floor Coverings after Static Loading
s. ASTM F1344	Standard Specification for Rubber Floor Tile
t. ASTM F1482	Standard Practice for Installation and Preparation of Panel Type Underlayments to Receive Resilient Flooring
u. ASTM F1514	Standard Test Method for Measuring Heat Stability of Resilient Flooring by Color
v. ASTM F1515	Standard Test Method for Measuring Light Stability of Resilient Flooring by Color Change
w. ASTM F1859	Standard Specification for Rubber Sheet Floor Covering Without Backing
x. ASTM F1860	Standard Specification for Rubber Sheet Floor Covering with Backing
y. ASTM F1861	Standard Specification for Resilient Wall Base
z. ASTM F2055	Standard Test Method for Size and Squareness of Resilient Floor Tile by Dial Gage Method
aa. ASTM F2169	Standard Specification for Resilient Stair Treads

bb. ASTM F2170	Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes
cc. ASTM F2199	Standard Test Method for Determining Dimensional Stability and Curling Properties of Resilient Flooring after Exposure to Heat
dd. ASTM F2753	Standard Practice to Evaluate the Effect of Dynamic Rolling Load over Resilient Floor Covering System
ee. ASTM F3010	Standard Practice for Two-Component Resin Based Membrane-Forming Moisture Mitigation Systems for Use Under Resilient Floor Coverings
ff. ASTM G21	Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's product data, installation instructions and maintenance guidelines for each material and accessory proposed for use.

B. Samples: Submit three representative samples of each product specified for verification.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Provide resilient flooring manufactured by a firm with a minimum of 10 years' experience with resilient flooring of type equivalent to those specified.

1. Manufacturer's quality management system must have ISO 9001:2000 approval.
2. Provide resilient flooring products and accessories from one manufacturer to ensure compatibility.
3. Manufacturer shall be capable of providing technical training and technical field service representation.

B. Installer Qualifications: Acceptable to manufacturer of resilient flooring or INSTALL (International Standards & Training Alliance) resilient certified for the requirements of the project with a minimum of 4 years' experience with resilient flooring of type equivalent to those specified.

1. It is recommended to have a minimum of one installer per working party with the ability to provide proof of current credentials on request.
2. Has obtained and maintained current credentials from manufacturer's training program.
3. Installers shall be able to exhibit proficient skills with flash cove detailing, both hot and cold-welding techniques, adhesives, specialty adhesive systems and seam cutting.
4. The installing parties shall provide a submittal of their skills in the form of mock-ups of the specified material. These mock-ups will be accepted as proof of their skills and benchmarking for the proposed project.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in labeled packages. Store and handle in strict compliance with manufacturer's recommendations. Protect from damage due to weather, excessive temperatures, and construction operations.

B. Deliver materials sufficiently in advance of installation to condition materials to the required temperature for 48-hours prior to installation.

1.6 PROJECT CONDITIONS

A. The installation area must be fully enclosed, weather tight, and climate controlled between 63°F and 75°F and 40% to 60% ambient relative humidity (RH) for at least 48 hours prior, during and 72 hours after installation (do not use gas fueled blowers). Dew point must be avoided. The substrate must be at least 5°F above dew point to be considered acceptable.

1.7 WARRANTY

A. Provide manufacturer’s standard limited warranty for wear, defect, bond, and conductivity.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURER

A. Basis-of-Design: nora systems, Inc., 9 Northeastern Blvd., Salem, NH 03079; telephone 800-332-NORA or 603-894-1021.

B. Pre-Approved Substitutions may be considered per 012500.

2.2 RESILIENT SHEET FLOORING FOR COMMERCIAL TRAFFIC

A. Rubber Sheet Floor Covering:

Rubber sheet meets the following product construction specifications:

1.	Product Name:	**noraplan® unita™, Article 1640**
2.	ASTM Specification: ASTM F1859 Standard Specification for Rubber Sheet Floor Covering Without Backing	Type I
3.	Material Composition:	nora vulcanized rubber compound 913 with environmentally compatible color pigments that are free of toxic heavy metals like lead, cadmium, or mercury
4.	Construction:	Homogeneous rubber compound with a randomly scattered granite chip design
5.	Limited Wear Warranty:	15 years

6.	Color:	Refer 090000 FINISHES and PLANS for Selection
7.	Surface:	Smooth
8.	Back of Sheet:	Double-sanded smooth
9.	Material Dimensions (ASTM F1859):	15 m by 1.22 m (~49.21 ft by 48 in), ≥ amount specified
10.	Thickness (ASTM F386): ± 0.15 mm (± 0.006 in) is required	2 mm (~0.08 in)
11.	Substrate Preparation:	Per ASTM F710 and the nora Installation Instructions
12.	Installation Method:	Directional installation
13.	Cleaning:	Cleaned and maintained effectively using water, nora pads and a suitable cleaning machine, without the use of any factory and/or field-applied coatings. Also, without using any chemicals that may be hazardous or containing any teratogenic, mutagenic or any other ingredients known to be carcinogenic. Refer to nora Maintenance Guidelines for product specific details.
14.	Shine:	Higher shine achieved by buffing without any artificial topical applied coatings.
15.	Stain Removal:	Samples of the product must be provided for stain removal testing by the owner. Sample size must be 610 mm by 610 mm, pre-cleaned by manufacture per published recommendations. Samples must have no coatings, sealers, floor finish or other manually or mechanically applied finish on the surface of the product. Stain testing must consist of application of common healthcare related disinfectants and chemicals to include, but not limited to, Betadine, Methylene Blue, Silver Nitrate, and alcohol-based hand sanitizer. Duration of test period must be no less than one week. Removal of chemicals must be in accordance with manufacturers published cleaning and maintenance recommendations.

Rubber sheet meets the following performance standards:

1.	Flammability (E648/NFPA 253): ≥ 0.45 watts/sq. cm for Class 1 is required	NBSIR 75 950, 0.82
2.	Smoke Density (ASTM E662): < 450 is required	NBS, 216 (flaming) and 315 (non-flaming)
3.	Burn Resistance (DIN EN 1399):	Resistant to cigarette and solder burns
4.	Slip Resistance (ASTM D2047): ≥ 0.5 is required	Static coefficient of friction, Neolite dry 0.84, Neolite wet 0.79
5.	Bacteria Resistance (ASTM E2180/ASTM G21):	Resistant to bacteria, fungi, and micro-organism activity
6.	Latex Allergies (ASTM D6499):	Inhibition ELISA, results are below detection level
7.	Sound Absorption (ASTM E2179/ISO 10140-3):	Δ IIC 12, Δ Lw 8 dB (compare only Δ values)

8.	Sound Generation (ASTM E492):	67.9 dBA, 69.9 dBC and 22 Sones, independently tested
9.	Hardness (ASTM D2240): ≥ 85 is required	Shore type A, 92
10.	Static Load (ASTM F970): ≤ 0.005 in with 250 lbs is required	Residual compression of 0.003 inches with 800 lbs.
11.	Rolling Load Limit (ASTM F2753):	≤ 450 lbs/sq in, with no forklift traffic
12.	Abrasion Resistance (ASTM D3389): ≤ 0.035 oz (1.0 g) is required	1.1 lbs (500 g) load on H-18 wheel with 1000 cycles, 0.008 oz (0.23 g) weight loss
13.	Elongation (ASTM D412): ≥ 300 lbs per sq in is required	Modulus @ 10% is 913.1 lbs per sq in
14.	Oil & Grease Resistance (ISO 26987):	No
15.	Heat Resistance (ASTM F1514): Avg. $\Delta E \leq 8.0$ is required	Easily achieved with all batches and regular maintenance
16.	Static Generation (AATCC 134):	< 1000 Volts at 20% RH
17.	Thermal Transmission (ASTM C518):	R-value of 0.04
18.	Embodied Carbon (Cradle to Gate):	5.87 kg CO_2e/m^3
19.	Indoor Air Quality:	GREENGUARD Gold Certified; CDPH 01350 compliant
20.	Disclosure of Environmental Impacts:	Environmental Product Declaration (EPD)
21.	Disclosure of Product Ingredients:	Health Product Declaration (HPD)
22.	Additional Certification and Transparency Documentation:	• Cradle to Cradle Certified® Silver • Greenhealth Approved

PART 3 - GENERAL

3.1 GENERAL CONTRACTOR RESPONSIBILITIES

A. Supply a safe, climate-controlled building and subfloor as detailed in the nora Installation Instructions (available at www.nora.com)

B. A subfloor that meets the requirements of ASTM F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring is required, or as detailed in the nora Installation Instructions or nora nTx Installation Instructions as appropriate.

C. A secure storage area that is fully enclosed, weather tight, and climate controlled between 63°F and 75°F and 40% to 60% ambient relative humidity (RH) for at least 48-hours prior and during the installation, so the flooring contractor can acclimate all materials.

D. An installation area that is fully enclosed, weather tight, and climate controlled between 63°F and 75° and 40% to 60% ambient relative humidity (RH) for at least 48-hours prior, during, and 72-

hours after installation (do not use gas fueled blowers). If this is not possible, contact the nora Technical Department.

E. Areas with direct prolonged exposure to sunlight should be protected with the use of Low E glass doors, windows or facades that reduce the UV transmissions to less than 1%.

F. Areas of the flooring subjected to direct sunlight, for example through doors or windows, must be covered using blind, curtains, cardboard, or similar materials for 24-hours before, during, and for a period of 72-hours after the installation to allow nora "wet" adhesives to cure. Do not allow traffic when using wet set adhesives for a minimum of 12-hours and prohibit rolling loads for 72-hours. When using nora® nTx™ or nora dryfix™, the flooring can be trafficked immediately with no restrictions. All flooring must be protected from damage during construction operations using Masonite, plywood, or a similar product. Before laying the panels, the flooring surface must be free of all debris. Lay panels so that they are edge to edge and tape the joints to prevent movement and debris entrapment. Inspect the flooring before covering and after removal for final acceptance.

G. Conduct post-installation cleaning after 72-hours for wet set adhesives. Conduct post-installation cleaning immediately for installations using nora dryfix or nora nTx. Refer to the appropriate nora Maintenance Guidelines for product specific details.

3.2 FLOORING CONTRACTOR RESPONSIBILITIES

A. Provide trained installers that have at least one of the following:

1. Approved by specified manufacturer (nora systems, Inc.) or INSTALL (International Standards & Training Alliance) certified for the requirements of the project.
2. It is recommended to have a minimum of one installer per working party with the ability to provide proof of current credentials on request.
3. An effective installation manager to manage the project, installers, and ensure that all the required procedures are followed as detailed in the nora Installation Instructions (available at www.nora.com).

B. Follow all requirements in the appropriate nora Installation Instructions or nora nTx Installation Instructions.

END OF SECTION 096516

SECTION 096850 – WALK-OFF CARPETING

PART 1 GENERAL

1.01 THIS SECTION INCLUDES

A. Carpet flooring as shown on the drawings and schedules and as indicated by the requirements of this section.

1.02 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract (including General and Supplementary Conditions and Division 1 sections) apply to the work in this section only.

1.03 RELATED SECTIONS

A. Other Division 9 sections for floor finishes related to this section but not the work of this section.

B. Division 3 Concrete - not included work this section.

C. Division 6 Wood and Plastics - not included work this section.

D. Division 7 Thermal and Moisture Protection - not included work this section.

1.04 QUALITY ASSURANCE AND REGULATORY REQUIREMENTS

A. Qualifications of Installers: All work shall be done by installation firms specializing in commercial carpet installation. It is required, that the firm or individual shall be a member of the Floor Covering Installation Contractors Association (FCICA) and/or certified by the Certified Floorcovering Installers Association (CFI). Flooring contractor to be specialty contractor normally engaged in this type of work and shall have three (3) years minimum documented experience in commercial installation of these materials and participation in manufacturer's environmental program including responsible carpet removal, recycling, and installation.

B. Flooring contractor will be responsible for the proper product installation, including floor preparation in all the areas indicated in the drawings to receive carpet. The carpet installation standard will be as listed in The Carpet and Rug Institute's Standard for Installation of Commercial Carpet CRI-104, the standard that establishes the minimum installation procedures.

C. Flooring contractor to provide owner a written warranty that guarantees the completed installation to be free from defects in materials and workmanship for a period of no less than two (2) years after job completion.

D. All warranties must be issued by the manufacturer as standard published warranties on all types of carpet within this document. Second source warranties that involve parties other than the carpet manufacturer are unacceptable. If the product fails to perform as warranted when installed according to the manufacturer’s installation instructions and maintained according to manufacturer’s maintenance instructions, the affected area will be repaired or replaced at the expense of the manufacturer. The carpet manufacturer will provide standard published written

performance warranties for the following:

1. Lifetime warranty against excessive surface wear. Excessive wear means no more than 10% loss of pile fiber weight measured before and after use as tested under ASTM D-3936.
2. Lifetime static protection, meaning built-in protection below 3.0 kv as tested under AATCC-134.
3. Tuft Bind (edge ravel, yarn pulls, zippering)
4. Delamination
5. Lifetime Moisture Barrier
6. Lifetime Dimensional Stability (for modular products only)

E. Carpet manufacturer to provide field service experts to assist in project start-up as required by the job. Manufacturer will notify owner, architect, general contractor, or another designated contact if any installation instructions are not followed.

F. Provide flooring material to meet the following test performance criteria as tested by a recognized independent testing laboratory. Certified test reports shall be submitted by the carpet manufacturer for each test method. Requirements listed below must be met by all products being submitted for approval:

1. Pill Test / DOC-FF-1-70 (ASTM D-2589) - Requirement: Pass
2. Flooring Radiant Panel / ASTM E-648 - Requirement: Class I (Above .45 w/cm)
3. CRI VOC Chamber Test/Indoor Air Quality test (CRI-IAQ) Green Label Plus Test.
4. Lightfastness: Rating of not less than 5 on International Grey Scale after 40 SFU's when tested in accordance with AATCC Test Method 16E.
5. Crockfastness: Minimum stain rating on International Grey Scale of not less than 5 wet or dry when tested in accordance with AATCC Test Method 165.
6. Atmospheric Fading: Burned Gas shall not be less than 5 on International Grey Scale after two cycles on each test as per AATCC Test Method 129 Ozone and AATCC Test Method 23.

G. Waste Reduction: If applicable, all polyethylene roll wrap shall be collected and recycled and all cardboard be collected and recycled.

1.05 SUBMITTALS

A. Submit manufacturer's warranties, installation instructions, and maintenance instructions before bid date.

B. Submit the manufacturer's certification that the flooring has been tested by an independent laboratory and complies with the required fire tests as well as the test listed under 1.04 F.

1.06 ENVIRONMENTAL/FIELD CONDITIONS

A. Deliver all materials to the installation site in the manufacturer's original packaging and in good condition. Packaging to contain manufacturer's name and marks, identification number, shipping and handling instructions and related information.

B. Delivered and stored materials must be available for inspection as required by the owner, architect, general contractor, and/or the manufacturer.

C. Sub-floor preparation is to include all required work to prepare the existing floor for installation of the product as specified in this document. Sub-floor preparation shall meet all conditions as specified Manufacturer’s Modular Carpet installation instructions.

D. Sub-floor preparation will include, as required, the removal and repair of the existing floor surface. It is required that the floor of a renovation project be inspected before the bid date.

E. All materials, including adhesives, are to be delivered to the site of installation at a minimum of 48 hours prior to the start of installation and stored in a clean and dry room that measures above 65°F and below 95°F and measures between 10% and 65% relative humidity (RH). To maintain temperature and relative humidity, permanent heating and air conditioning systems (HVAC) must be in operation. Stack rolls horizontally and no higher than two rolls high on a flat surface. After work is completed, the ambient room temperature should remain at 65°F and relative humidity between 10% and 65% for 48 hours. These materials and related adhesives shall be protected from the direct flow of heat from heating fixtures and appliances such as hot-air registers, radiators, or other. Site conditions shall include those specified in the carpet manufacturer' installation manual and shall also include sufficient heat, light, and power required for effective and efficient working condition.

F. Once the temperature and relative humidity in area for installation have been stabilized, loose lay the carpet within the installation area and allow it to precondition for 48 hours prior to installation. Carpet installation shall not commence until painting and finishing work is complete and ceiling and overhead work is tested, approved, and completed. Traffic shall be closed during the installation of the flooring products. Verify concrete slabs are dry per the standards for bond and moisture tests listed in the manufacturer's installation manual.

1.07 SUBSTITUTIONS

A. All Bid submittals must conform to the specifications in this document. Submit as required in section 012500 SUBSTITUTION PROCEDURES.

B. All test results to be in accordance with a certified independent testing laboratory.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturer: Milliken & Co. Flooring,

1. Lifetime warranty against excessive surface wear. Excessive wear means no more than 10% loss of pile fiber weight measured before and after use as tested under ASTM D-3936.
2. Any manufacturer and/or product must meet or exceed those requirements specified under all sections of this document in pattern, color, and fiber. Any substitutions must be made in accordance with Section 1.07 of this document.

2.02 FLOORING MATERIALS

A. Carpet Tile Type 1: WALK-OFF CARPET (FC-2), Refer 090000 for additional information.

1. Product: Refer 090000
2. Color: Refer 090000
3. Soil Release: Yes
4. Stain Resistance: Yes
5. Bleach Resistance: Yes
6. Optional Treatments: Yes
7. Standard Size: Refer 090000 and PLANS
8. Warranties: Lifetime Fiber Performance for Wear, Lifetime for Tuft Bind Strength (edge ravel, yarn pulls, zippering), Lifetime Protection from Delamination Failure, Lifetime Fiber Performance for Static, Lifetime Colorfastness to Atmospheric Contaminants, Lifetime Stain Removal
9. Testing Specifications - Pill Test: Yes
10. Testing Specifications - Flooring Radiant Panel: Class 1
11. Testing Specifications - Smoke Density: Less than 450.0 flaming (ASTM E 662)
12. Testing Specifications - Static Test: Less than 3.0kv (AATCC-134)
13. Testing Specifications - Lightfastness Test: 1

2.03 ADHESIVES

A. Manufacturer tabs. Install per manufacturer’s requirements.

2.04 ACCESSORIES

A. Provide transition/reducing strips tapered to meet abutting materials as indicated in the drawings.

B. Provide edge strips made of extruded aluminum with a mill finish, unless otherwise noted.

PART 3 EXECUTION

3.01 INSPECTION

A. Examine and verify that sub-floor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive carpet.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive carpet.

C. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of adhesive materials to sub-floor surfaces.

D. Verify that concrete sub-floor surfaces are dry enough and ready for flooring installation by testing for moisture emission rate and alkalinity in accordance with ASTM F 710; obtain instructions if test results are not within limits recommended by carpet manufacturer and adhesive materials manufacturer.

E. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

A. Starting installation constitutes acceptance of sub-floor conditions.

B. SURFACE PREPARATION- Dust, dirt, debris and noncompatible adhesive must be removed before the installation begins. Surfaces must be smooth and level with all holes and cracks filled with Portland cement-based patch reinforced with polymers or primed with Commercialon Premium Sealer.

C. CONCRETE MOISTURE TESTING and pH Testing - Substrate surfaces must be tested for moisture emission. It is the responsibility of the owner or owner's representative to perform moisture testing prior to starting the installation. ASTM-F2170-2 relative humidity probe moisture testing or ASTM-F1869 calcium chloride testing can be performed on the concrete to determine the surface moisture emission rate. Acceptable relative humidity probe testing results are up to 90% RH. An acceptable result for calcium chloride moisture testing is up to 5 lbs per 1,000 SF per 24 hours. Alkalinity tests should also be performed per ASTM-F710. The maximum acceptable pH is 9.0. Carpet prefers relative humidity probe moisture testing over calcium chloride testing, as the results are more accurate and reliable. For test results that determine RH test readings of 90%-97%, moisture emission rates of 5 lbs - 8 lbs, or pH readings of 9.0 - 11.00, Commercialon Premium Sealer is required.

3.03 INSTALLATION OF FLOORING

A. Install flooring in strict accordance with the finish drawings, manufacturer's instructions, and CRI Carpet Installation Standard. Install carpet tile in accordance with manufacturer's instructions and CRI 104.

B. FINISHED INSTALLATION- Roll entire job with 75-100 lb. roller after completion of installation.

3.05 CLEANING AND PROTECTION

B. Clean and vacuum carpet surfaces.

C. LOOP PILE CONSTRUCTION--Carpet modules with loop pile constructions may experience yarn blossoming at the edges, which is consistent with this type of construction. Clipping or shearing the yarn edges can remedy this condition.

END OF SECTION 096850

SECTION 097200 – GRAPHIC WALL COVERINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Graphic wall coverings.
B. Related Sections: The following Sections contain requirements that relate to this Section:
   1. Section 099123, INTERIOR PAINTING for priming wall surfaces.

1.3 SUBMITTALS

A. Submit each item in this Article according to the Conditions of the Contract and Division 01 Specification Sections.
B. Product Data for each type of product specified. Include data on physical characteristics, durability, fade resistance, and flame-resistance characteristics.
C. Shop Drawings showing location and extent of each wall covering type. Indicate seams and termination points.
   1. Include full color rendering of each graphic wall type at minimum 1/4” = 1’-0” scale.
D. Samples for verification in sets for each color, texture, and pattern specified, showing the full range of variations expected in these characteristics.
   1. Wall Covering Material: Full-width sample, not less than 36 inches (914 mm) long, from dye lot used for the Work.
      a. Submit sample with specified treatments applied.
      b. Mark top and face of material.
      c. Show complete pattern repeat.
E. Schedule of wall coverings using same room designations indicated on Drawings.
F. Product certificates signed by manufacturers of wall coverings certifying that their products comply with specified requirements.
G. Maintenance data for wall covering to include in the operation and maintenance manual specified in Division 01.
H. Other Submittals:
   1. Manufacturer’s written statement on recycled content, manufacturing location and source/origin of the raw materials.
   2. MSDS of adhesives verifying the VOC content less than the current limits of South Coast Air Quality Management District (SCAQMD) Rule #1168.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced installer who has completed 5 projects similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.
B. Fire-Test-Response Characteristics: Provide wall coverings with the following surface-burning characteristics as determined by testing identical products per ASTM E 84 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
   1. Flame Spread: 25 or less.
   2. Smoke Developed: 450 or less.

1.5 PROJECT CONDITIONS

A. Space Enclosure and Environmental Limitations: Do not install wall covering until space is enclosed and weatherproof, wet-work in space is completed and nominally dry, work above ceilings is complete, and ambient temperature and humidity conditions are and will be continuously maintained at values near those indicated for final occupancy.

B. Lighting: Do not install wall covering until a lighting level of not less than 15 foot-candles (160 lux) is provided on the surfaces to receive wall covering.

C. Ventilation: Provide continuous ventilation during installation and for not less than the time recommended by the wall covering manufacturer for full drying or curing.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, provide one of the products specified in each wall covering Product Data sheet at end of this Section.

B. Basic Design Services, Design Conception Work or an approved equal:

1. Provide services to develop graphic murals for Graphic Wall Coverings indicated in PLANS and 090000 “Finishes”.
2. Develop project documentation for approval.

2.2 ADHESIVES

A. General: Mildew-resistant, nonstaining adhesive, for use with specific wall covering and substrate application, as recommended by wall covering manufacturer.

B. VOC limits: shall be less than the current VOC limits of SCAQMD Rule #1168 requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates for compliance with requirements for moisture content and other conditions affecting performance of Work of this Section. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Comply with manufacturer's written instructions for surface preparation.

B. Clean substrates of substances that could impair wall covering's bond, including mold, mildew, oil, grease, incompatible primers, and dirt.

C. Prepare substrates to achieve a smooth, dry, clean surface free of flaking, unsound coatings, cracks, and defects.

1. Painted Surfaces: Treat areas susceptible to pigment bleeding.
2. Metals: If not factory primed, clean and apply rust-inhibitive zinc primer.
3. Prime new gypsum board with primer recommended by wall covering manufacturer.

D. Check painted surfaces for pigment bleeding. Sand gloss, semigloss, and eggshell finishes with fine sandpaper.

E. Acclimatize wall covering materials by removing them from packaging in the installation areas not less than 24 hours before installation.

3.3 INSTALLATION, GENERAL

A. General: Comply with wall coverings manufacturers' written installation instructions applicable to products and applications indicated, except where more stringent requirements apply.

B. Cut wall covering panels in roll number sequence. Change run numbers at partition breaks and corners only.
C. Install wall covering with no gaps or overlaps.
D. Match pattern 72 inches (1830 mm) above finish floor.
E. Install seams vertical and plumb at least 6 inches (150 mm) from outside corners and 3 inches (75 mm) from inside corners. No horizontal seams.
F. Remove air bubbles, wrinkles, blisters, and other defects.
G. Trim edges for color uniformity, pattern match, and tight closure at seams and edges. Butt seams.

3.4 CLEANING

A. Remove excess adhesive at finished seams, perimeter edges, and adjacent surfaces.
1. Use cleaning methods recommended by wall covering manufacturer.
2. Replace strips that cannot be cleaned.

3.5 WALL COVERING SCHEDULE

A. GRAPHIC WALL COVERING (WC-1)
1. Vinyl Wall Covering
a. Koroseal Digital
b. Block DK-GM0012-01
c. Fine Texture DS0103
d. Type II
e. 20 Oz
f. Location: Refer Finish Plan & Interior Elevations

B. GRAPHIC WALL COVERING (WC-2)
1. Vinyl Wall Covering
a. MDC
b. Silk Road BB-SR-36 Grand Bazaar
c. Type II
d. 20 Oz
e. Location: Refer Finish Plan & Interior Elevations

C. GRAPHIC WALL COVERING (WC-3)
1. Vinyl Wall Covering
a. Koroseal Digital
b. Awaken Valley
c. Kde-Awv-04
d. Linen DS0100
e. Type II
f. 20 Oz
g. Location: Refer Finish Plan & Interior Elevations

D. GRAPHIC WALL COVERING (WC-4)
   1. Vinyl Wall Covering
      a. MDC
      b. Formosa Fizz Desert Sun DDC2286
      c. Digital Curated
      d. Matte
      e. Location: Refer Finish Plan & Interior Elevations

E. GRAPHIC WALL COVERING (VWG-1)
   1. Vinyl Wall Graphic
      a. MSSU Lion Head
      b. Logo shall be per MSSU brand standards
      c. Interior type film
      d. 2 mil thickness
      e. Matte over-laminate film
      f. Location: 4/A300

END OF SECTION 097200

SECTION 098419 – CEMENTITIOUS WOOD FIBER WALL PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes: Cementitious wood fiber acoustical wall panel system and installation accessories.

1.3 REFERENCES

A. ASTM International:

1. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.

1.4 SYSTEM DESCRIPTION

A. Performance Requirements:

1. Provide acoustical wall panel assembly designed and tested to provide surface burning characteristics (ASTM E84) as follows:

   a. Flamespread: 5.
   b. Smoke Developed: 15.

2. Provide acoustical wall panel system which has been manufactured, fabricated and installed to provide Noise Reduction Coefficient (NRC) rating as follows:

   a. NRC Rating: 0.95.

1.5 SUBMITTALS

A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 01 Section “Submittal Procedures.”

B. Product Data: Submit manufacturer’s product data and installation instructions.

1. Recommended procedures for normal cleaning and removal of stains including precautions in use of cleaning materials that may be detrimental to surfaces.

C. Quality Assurance/Control Submittals: Submit the following:

1. Test Reports: Upon request, submit certified test reports from recognized test laboratories.
2. Certificates: Submit manufacturer's certificate that products meet or exceed specified requirements.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Utilize an installer having demonstrated experience on projects of similar size and complexity.

B. Regulatory Requirements and Approvals: Comply with requirements below.

1. International Conference of Building Officials (ICBO):

a. ICBO Research Report No. 1116.

2. Underwriters' Laboratories of Canada (ULC) label.

a. Structural Cement-Fiber Unit-535X.

1.7 DELIVERY, STORAGE AND HANDLING

A. General: Comply with Division 01 Section requirements.

B. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer.

1. Prevent soiling, physical damage or wetting.
2. Store cartons open at each end to stabilize moisture content and temperature.

1.8 PROJECT/SITE CONDITIONS

A. Environmental Requirements:

1. Do not install acoustical panels until building is closed in and HVAC system is operational.
2. Locate materials onsite at least 24 hours before beginning installation to allow materials to reach temperature and moisture content equilibrium.
3. Maintain the following conditions in areas where acoustical materials are to be installed 24 hours before, during and after installation:

a. Relative Humidity: 65% to 75%.
b. Uniform Temperature: 55 to 70 degrees F (13 to 21 degrees C).

1.9 MAINTENANCE

A. Extra Materials: Provide two additional panels for use by Owner in building maintenance and repair.

PART 2 - PRODUCTS

2.1 ACOUSTICAL WALL PANEL SYSTEM (AWP-1)

A. Product: Subject to compliance with requirements, provide the following:

1. Tectum, Inc.; DesignArt Lines

B. Proprietary System: Acoustical wall panel systems, including the following:

1. Material: Aspen wood fibers bonded with inorganic hydraulic cement.
2. Thickness: 1-inch
3. Mounting: Direct-Attach (D-20) Wall Panels
4. Edge: Square, finish to match face with Mfr's Touch-up Kit
5. Width: As indicated.
6. Length: As indicated.
7. Color: Refer 090000 "Finishes"

2.2 ACCESSORIES

A. Provide accessories as follows:

1. Tectum Painted Head Screws:

a. Material: As required for substrate with a flush appearance. Paint fasteners to match specified colors.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

A. Comply with the instructions and recommendations of the acoustical wall panel system manufacturer.

B. Install materials in accordance with governing regulations, fire resistance rating requirements and industry standards applicable to work.

1. Comply with CISCA Code of Practices.

3.2 EXAMINATION

A. Site Verification of Conditions:

1. Examine surfaces scheduled to receive suspended or directly attached acoustical units for unevenness, irregularities and dampness that would affect quality and execution of work.
2. Do not proceed with installation of wall panel system until unacceptable conditions are corrected.

3.3 INSTALLATION

A. Screw head to be flush with panel surface.

B. Cover field cut edges.

C. Paint as indicated on the Drawings.

3.4 CLEANING

A. Clean exposed surfaces of acoustical panel, trim, moldings and suspension members to comply with manufacturer's instructions for cleaning.

B. Touch up any minor finish damage.

C. Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

3.5 PROTECTION

A. Protect installed work from damage due to subsequent construction activity, including temperature and humidity limitations and dust control, so that the work will be without damage and deterioration at the time of acceptance by the Owner.

END OF SECTION 098419

SECTION 098433 - SOUND-ABSORBING WALL PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes shop-fabricated, acoustical panel units tested for acoustical performance, including the following:

1. Sound-absorbing wall panels.

B. Related Requirements:

1. Section 092216 “Non-Structural Metal Framing” for ceiling suspension systems.
2. Section 092900 “Gypsum Board.”
3. Section 095113 “Acoustical Panel Ceilings.”

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include fabric facing, panel edge, and mounting indicated.

B. Shop Drawings: For unit assembly and installation.

1. Include plans, elevations, sections, and details.
2. Include details at panel head, base, joints, and corners; and details at ceiling, floor base, and wall intersections. Indicate panel edge profile.
3. Include details at cutouts and penetrations for other work.
4. Include direction of fabric weave and pattern matching.

C. Samples for Initial Selection: For each type of fabric facing.

1. Include Samples of hardware and accessories involving color or finish selection.

D. Samples for Verification: For the following products:

1. Panel: 12” x 12” Sample, but not smaller than required to show complete pattern repeat, from dye lot to be used for the Work, and with specified treatments applied.

1.4 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Elevations and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Electrical outlets, switches, and thermostats.
2. Items penetrating or covered by units including the following:

a. Lighting fixtures.
b. Air outlets and inlets.
c. Speakers.
d. Alarms.
e. Sprinklers.
f. Access panels.
g. Electronic devices.

B. Product Certificates: For each type of unit.

C. Sample Warranty: For manufacturer's special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of unit to include in maintenance manuals. Include manufacturers' written cleaning and stain-removal instructions.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum 10 years of experience in producing acoustical products of the types specified herein.

B. Installer Qualifications: Acceptable to the manufacturer of the acoustical products being installed.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Comply with unit manufacturers' written instructions for minimum and maximum temperature and humidity requirements for shipment, storage, and handling.

B. Deliver materials and units in unopened bundles and store in a temperature-controlled dry place with adequate air circulation.

1.8 FIELD CONDITIONS

A. Environmental Limitations: Do not install units until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work at and above ceilings is complete, and ambient

temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Lighting: Do not install units until a permanent level of lighting is provided on surfaces to receive the units.

C. Air-Quality Limitations: Protect units from exposure to airborne odors, such as tobacco smoke, and install units under conditions free from odor contamination of ambient air.

D. Field Measurements: Verify unit locations and actual dimensions of openings and penetrations by field measurements before fabrication, and indicate them on Shop Drawings.

1.9 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace units and components that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to the following:

a. Acoustical performance.
b. Panel sagging, distorting, or releasing from panel edge.

2. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain wall units specified in this Section from single source from single manufacturer.

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Kirei (619.236.9924, sales@kireiusa.com)
a. Acoustic Wall Panels
b. AFP-1:
1) Ion Panel
2) Color: as selected by Architect from Manufacturer’s standard range
3) Locations: Refer Finish Plan, Elevations and 090000 “Finishes”
c. AWT-1:
1) Barcode Tile
2) Color: Vinyard
3) Locations: Refer Finish Plan, Elevations and 090000 “Finishes”
2. Pre-approved equal per 012500.

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: Units shall comply with "Surface-Burning Characteristics" or "Fire Growth Contribution" Subparagraph below, or both, as determined by testing identical products by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:

1. Surface-Burning Characteristics: Comply with ASTM E 84 or UL 723; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

a. Flame-Spread Index: 25 or less.

b. Smoke-Developed Index: 450 or less.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine fabricated units, substrates, areas, and conditions for compliance with requirements, installation tolerances, and other conditions affecting unit performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install units in locations indicated. Unless otherwise indicated, install units with vertical surfaces and edges plumb, top edges level and in alignment with other units, faces flush, and scribed to fit adjoining work accurately at borders and at penetrations.

B. Comply with manufacturer's written instructions for installation of units using type of mounting adhesives indicated. Mount units securely to supporting substrate.

C. Align fabric pattern and grain with adjacent units and as indicated on Drawings.

3.3 INSTALLATION TOLERANCES

A. Variation from Plumb and Level: Plus or minus 1/16 inch (1.6 mm) in 48 inches (1200 mm), noncumulative.

B. Variation of Joint Width: Not more than 1/16-inch (1.6-mm) variation from hairline in 48 inches (1200 mm), noncumulative.

3.4 CLEANING

A. Clip loose threads; remove pills and extraneous materials.

B. Clean panels on completion of installation to remove dust and other foreign materials according to manufacturer's written instructions.

END OF SECTION 098433

SECTION 099123 – INTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes surface preparation and the application of paint systems on interior substrates.

1. Concrete.
2. Concrete masonry units (CMUs).
3. Steel and iron.
4. Wood.
5. Gypsum board.

1.3 DEFINITIONS

A. MPI Gloss Level 1: Not more than five units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.

B. MPI Gloss Level 2: Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.

C. MPI Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.

D. MPI Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.

E. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.

F. MPI Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.

G. MPI Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

1. Include Printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.

2. Indicate VOC content.

B. Samples for Initial Selection: For each type of topcoat product.

C. Samples for Verification: For each type of paint system and in each color and gloss of topcoat.

1. Submit Samples on rigid backing, 8 inches (200 mm) square.
2. Apply coats on Samples in steps to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

D. Product List: Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Paint: 5 percent, but not less than 1 gal. (3.8 L) of each material and color applied.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.7 FIELD CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).

B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Benjamin Moore & Co.
2. Coronado Paint; Benjamin Moore Company.
3. Diamond Vogel Paints.

4. Kwal Paint; Comex Group.
5. PPG Architectural Coatings.
6. BEHR
7. Sherwin-Williams Company (The).
8. Valspar Corporation - Architectural (Pro).

2.2 SPECIALTY WALL PAINT

A. Theater 108 Projection Screen Wall: Refer 090000 “Finishes” (P-8).

B. Install on Level 5 finish

C. Install per Manufacturer’s requirements

2.3 PAINT, GENERAL

A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products Lists."

B. Material Compatibility:

1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.

C. VOC Content of Field-Applied Interior Paints and Coatings: Provide products that comply with the following limits for VOC content, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24); these requirements do not apply to paints and coatings that are applied in a fabrication or finishing shop:

1. Flat Paints, Coatings, and Primers: VOC content of not more than 50 g/L.
2. Nonflat Paints, Coatings, and Primers: VOC content of not more than 150 g/L.
3. Anti-Corrosive and Anti-Rust Paints Applied to Ferrous Metals: VOC not more than 250 g/L.
4. Floor Coatings: VOC not more than 100 g/L.
5. Nonflat Topcoat Paints: VOC content of not more than 150 g/L.
6. Primers, Sealers, and Undercoaters: VOC content of not more than 200 g/L.
7. Dry-Fog Coatings: VOC content of not more than 400 g/L.
8. Zinc-Rich Industrial Maintenance Primers: VOC content of not more than 340 g/L.
9. Pre-Treatment Wash Primers: VOC content of not more than 420 g/L.

D. Chemical Components of Field-Applied Interior Paints and Coatings: Provide topcoat paints and anti-corrosive and anti-rust paints applied to ferrous metals that comply with the following chemical restrictions; these requirements do not apply to paints and coatings that are applied in a fabrication or finishing shop:

1. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
2. Restricted Components: Paints and coatings shall not contain any of the following:

    a. Acrolein.
    b. Acrylonitrile.
    c. Antimony.
    d. Benzene.
    e. Butyl benzyl phthalate.
    f. Cadmium.
    g. Di (2-ethylhexyl) phthalate.
    h. Di-n-butyl phthalate.
    i. Di-n-octyl phthalate.
    j. 1,2-dichlorobenzene.
    k. Diethyl phthalate.
    l. Dimethyl phthalate.
    m. Ethylbenzene.
    n. Formaldehyde.
    o. Hexavalent chromium.
    p. Isophorone.
    q. Lead.
    r. Mercury.
    s. Methyl ethyl ketone.
    t. Methyl isobutyl ketone.
    u. Methylene chloride.
    v. Naphthalene.
    w. Toluene (methylbenzene).
    x. 1,1,1-trichloroethane.
    y. Vinyl chloride.

E. Colors: See Paint Color Schedule at the end of this section.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

1. Concrete: 12 percent.
2. Fiber-Cement Board: 12 percent.
3. Masonry (Clay and CMUs): 12 percent.
4. Wood: 15 percent.
5. Gypsum Board: 12 percent.
6. Plaster: 12 percent.

C. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.

D. Plaster Substrates: Verify that plaster is fully cured.

E. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.

F. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.

E. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceeds that permitted in manufacturer's written instructions.

F. Steel Substrates: Remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer but not less than the following:

1. SSPC-SP 3.

G. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

H. Wood Substrates:

1. Scrape and clean knots, and apply coat of knot sealer before applying primer.
2. Sand surfaces that will be exposed to view, and dust off.
3. Prime edges, ends, faces, undersides, and backsides of wood.
4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions and to recommendations in "MPI Manual."

1. Use applicators and techniques suited for paint and substrate indicated.
2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.

B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

E. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:

1. Paint the following work where exposed in equipment rooms:

a. Equipment, including panelboards.
b. Uninsulated metal piping.
c. Uninsulated plastic piping.
d. Pipe hangers and supports.
e. Metal conduit.
f. Plastic conduit.
g. Tanks that do not have factory-applied final finishes.
h. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.

2. Paint the following work where exposed in occupied spaces:

    a. Equipment, including panelboards.
    b. Uninsulated metal piping.
    c. Uninsulated plastic piping.
    d. Pipe hangers and supports.
    e. Metal conduit.
    f. Plastic conduit.
    g. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
    h. Other items as directed by Architect.

3. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.

3.4 FIELD QUALITY CONTROL

A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.

1. Contractor shall touch up and restore painted surfaces damaged by testing.
2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 INTERIOR PAINTING SCHEDULE

A. CMU Substrates:

1. Latex System MPI INT 4.2A:

    a. Block Filler: Block filler, latex, interior/exterior, MPI #4.

b. Intermediate Coat: Latex, interior, matching topcoat.
c. Topcoat: Latex, interior, satin (MPI Gloss Level 4), MPI #43.
d. Topcoat: Latex, interior, semi-gloss (MPI Gloss Level 5), MPI #54.

B. Steel Substrates:

1. High-Performance Architectural Latex System MPI INT 5.1R:

a. Prime Coat: Primer, alkyd, quick dry, for metal, MPI #76.
b. Intermediate Coat: Latex, interior, high performance architectural, matching topcoat.
c. Topcoat: Latex, interior, high performance architectural, semi-gloss (MPI Gloss Level 4), MPI #141.
d. Location: Prime new and existing unfinished metals, intermediate and topcoat at all metals.

2. Water-Based Dry-Fall System MPI INT 5.1C:

a. Prime Coat: Primer, alkyd, quick dry, for metal, MPI #76.
b. Topcoat: Dry fall, latex, flat, MPI #118.

3. Water-Based Dry-Fall over Shop-Applied Quick-Drying Shop Primer System MPI INT 5.1CCC:

a. Prime Coat: Primer, quick dry, for shop application, MPI #275.
b. Topcoat: Dry fall, latex, flat, MPI #118.
c.

C. Gypsum Board and Plaster Substrates:

1. Latex over Latex Sealer System MPI INT 9.2A:

a. Prime Coat: Latex, interior, matching topcoat.
b. Intermediate Coat: Latex, interior, matching topcoat.
c. Topcoat: Latex, interior (MPI Gloss Level 2), MPI #44.

1) Location: Ceilings and soffits.

d. Topcoat: Latex, interior eggshell (MPI Gloss Level 4), MPI #43.

1) Location: Walls

e. Topcoat: Latex, interior, semi-gloss (MPI Gloss Level 4), MPI #54.

3.7 PAINT COLOR SCHEDULE

A. Paint Color: Provide the following: See PLANS for specified (P1 to P8).

END OF SECTION 099123

SECTION 099300 – STAINING AND TRANSPARENT FINISHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes surface preparation and application of wood stains and transparent finishes on the following substrates:

1. Interior Substrates:

a. Wood.

B. Related Requirements:

1. Section 099123 "Interior Painting" for stains and transparent finishes on concrete floors.

1.3 DEFINITIONS

A. MPI Gloss Level 1: Not more than 5 units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.

B. MPI Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.

C. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.

D. MPI Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.

E. MPI Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

1. Include printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
2. Indicate VOC content.

B. Product List: Cross-reference to finish system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

C. Provide (3) 4” x 4” Physical Samples for verification

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Stains and Transparent Finishes: 5 percent, but not less than 1 gal. (3.8 L) of each material and color applied.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.7 FIELD CONDITIONS

A. Apply finishes only when temperature of surfaces to be finished and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).

B. Do not apply finishes when relative humidity exceeds 85 percent, at temperatures less than 5 deg F (3 deg C) above the dew point, or to damp or wet surfaces.

C. Do not apply exterior finishes in snow, rain, fog, or mist.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Basis of Design as outlined in 090000 (Finish Carpentry). Subject to compliance with requirements, provide products by one of the following:
1. Minwax
2. Benjamin Moore & Co.
3. Kwal Paint; Comex Group.
4. PPG Architectural Finishes, Inc.
5. Sherwin-Williams Company (The).

B. Products: Subject to compliance with requirements, provide one of the products listed in wood finish systems schedules for the product category indicated.

2.2 MATERIALS, GENERAL

A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products List."

B. Material Compatibility:

1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, products shall be recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

C. VOC Content: For field applications, paints and coatings shall comply with VOC content limits of authorities having jurisdiction and the following VOC content limits:

1. Primers, Sealers, and Undercoaters: 100 g/L.
2. Clear Wood Finishes, Varnishes: 275 g/L.
3. Clear Wood Finishes, Lacquers: 275 g/L.
4. Stains: 100 g/L.

D. Stain Colors: Refer 090000 – Finishes (WD-1, WD-2)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Exterior Wood Substrates: 15 percent, when measured with an electronic moisture meter.

C. Maximum Moisture Content of Interior Wood Substrates: 10 percent, when measured with an electronic moisture meter.

D. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

E. Proceed with finish application only after unsatisfactory conditions have been corrected.

1. Beginning finish application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and finishing.

1. After completing finishing operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

C. Clean and prepare surfaces to be finished according to manufacturer's written instructions for each substrate condition and as specified.

1. Remove dust, dirt, oil, and grease by washing with a detergent solution; rinse thoroughly with clean water and allow to dry. Remove grade stamps and pencil marks by sanding lightly. Remove loose wood fibers by brushing.
2. Remove mildew by scrubbing with a commercial wash formulated for mildew removal and as recommended by stain manufacturer.

D. Interior Wood Substrates:

1. Scrape and clean knots, and apply coat of knot sealer before applying primer.
2. Apply wood filler paste to open-grain woods, as defined in "MPI Architectural Painting Specification Manual," to produce smooth, glasslike finish.
3. Sand surfaces exposed to view and dust off.
4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dry.

3.3 APPLICATION

A. Apply finishes according to manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual."

1. Use applicators and techniques suited for finish and substrate indicated.
2. Finish surfaces behind movable equipment and furniture same as similar exposed surfaces.
3. Do not apply finishes over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

B. Apply finishes to produce surface films without cloudiness, holidays, lap marks, brush marks, runs, ropiness, or other surface imperfections.

3.4 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing finish application, clean spattered surfaces. Remove spattered materials by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from finish application. Correct damage by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced finished wood surfaces.

3.5 INTERIOR WOOD -FINISH-SYSTEM SCHEDULE

A. Wood Substrates:

1. Polyurethane Varnish:

a. Stain Coat: Stain, semitransparent, for interior wood, MPI #90. Verify with Architect prior to applying Varnish.
b. Topcoat: Varnish, interior, polyurethane, oil modified, satin (MPI Gloss Level 4), Clear Satin Gloss.
c. Topcoat: Varnish, interior, polyurethane, oil modified, gloss (MPI Gloss Level 6), Clear Satin Gloss

END OF SECTION 099300

SECTION 101419 - DIMENSIONAL LETTER SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Cast dimensional characters.

1.3 COORDINATION

A. Furnish templates for placement of electrical service embedded in permanent construction by other installers.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For dimensional letter signs.

1. Include fabrication and installation details and attachments to other work.
2. Show sign mounting heights, locations of supplementary supports to be provided by others, and accessories.
3. Show message list, typestyles, graphic elements, and layout for each sign at least half size.
4. Show locations of electrical service connections.
5. Include diagrams for power, signal, and control wiring.

C. Samples for Verification: For each type of sign assembly showing all components and with the required finish(es), in manufacturer's standard size unless otherwise indicated and as follows:

1. Dimensional Characters: Full-size Sample of each type of dimensional character.

D. Sign Schedule: Use same designations specified or indicated on Drawings or in a sign schedule.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer and manufacturer.

B. Sample Warranty: For special warranty.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.7 FIELD CONDITIONS

A. Field Measurements: Verify locations of electrical service embedded in permanent construction by other installers by field measurements before fabrication, and indicate measurements on Shop Drawings.

1.8 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

    a. Deterioration of finishes beyond normal weathering.
    b. Separation or delamination of sheet materials and components.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 DIMENSIONAL CHARACTERS

A. Cast Characters: Characters with uniform faces, sharp corners, and precisely formed lines and profiles, and as follows:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. ACE Sign Systems, Inc.
    b. Allen Markings.
    c. APCO Graphics, Inc.
    d. ASI Sign Systems, Inc.
    e. Gemini Incorporated.
    f. Matthews International Corporation; Bronze Division.
    g. Metal Arts.
    h. Metallic Arts.

2. Character Material: Acrylic.
3. Character Height: See Signage Schedule.
4. Thickness: See Signage Schedule.

5. Finishes:

    a. Returns to match specified face finish. See Signage Schedule.

6. Mounting: Flush mount using standard fastening methods recommended by the manufacturer for masonry substrate and interior applications. Stud for Brick mounting with a template for exterior applications.
7. Typeface: Match Architect's sample.
8. Lighting: Provide integral LED lighting per signage schedule, if applicable.

2.2 ACCESSORIES

A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signage, noncorrosive and compatible with each material joined, and complying with the following:

1. Use concealed fasteners and anchors unless indicated to be exposed.
2. For exterior exposure, furnish hot-dip galvanized devices unless otherwise indicated.
3. Sign Mounting Fasteners:

    a. Concealed Studs: Concealed (blind), threaded studs welded or brazed to back of sign material, screwed into back of sign assembly, or screwed into tapped lugs cast integrally into back of cast sign material, unless otherwise indicated.

2.3 FABRICATION

A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.

1. Preassemble signs and assemblies in the shop to greatest extent possible. Disassemble signs and assemblies only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation; apply markings in locations concealed from view after final assembly.
2. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.
3. Internally brace signs for stability and for securing fasteners.
4. Provide rebates, lugs, and brackets necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.
5. Castings: Fabricate castings free of warp, cracks, blowholes, pits, scale, sand holes, and other defects that impair appearance or strength. Grind, wire brush, sandblast, and buff castings to remove seams, gate marks, casting flash, and other casting marks before finishing.

2.4 GENERAL FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Directional Finishes: Run grain with long dimension of each piece and perpendicular to long dimension of finished trim or border surface unless otherwise indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of signage work.

B. Verify that sign-support surfaces are within tolerances to accommodate signs without gaps or irregularities between backs of signs and support surfaces unless otherwise indicated.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.

1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
2. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
3. Corrosion Protection: Coat concealed surfaces of exterior aluminum in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.

B. Mounting Methods:

1. Concealed Studs: Using a template, drill holes in substrate aligning with studs on back of sign. Remove loose debris from hole and substrate surface.

    a. Masonry Substrates: Fill holes with adhesive. Leave recess space in hole for displaced adhesive. Place sign in position and push until flush to surface, embedding studs in holes. Temporarily support sign in position until adhesive fully sets.
    b. Thin or Hollow Surfaces: Place sign in position and flush to surface, install washers and nuts on studs projecting through opposite side of surface, and tighten.

2. Studs for Brick: Provide template and drill holes into mortar instead of brick.

3.3 ADJUSTING AND CLEANING

A. Remove and replace damaged or deformed characters and signs that do not comply with specified requirements. Replace characters with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.

B. Remove temporary protective coverings and strippable films as signs are installed.

C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

3.4 SIGNAGE SCHEDULE

A. INTERIOR
   1. 5/A300:
      a. Text: THEATER
      b. Mounting: Face-Mounted over Gypsum Board
      c. Lighting: None
      d. Size: 8” Tall – Refer Elevation
      e. Returns: 1/4"
      f. Color: Matte White
      g. Font: Artifakt Element Medium

B. INTERIOR
   1. 9/A301
      a. Text: MAYES STUDENT LIFE CENTER
      b. Mounting: Face-Mounted over Gypsum Board
      c. Lighting: None
      d. Size: 8” Tall – Refer Elevation
      e. Returns: 1” in Green
      f. Color: Matte White
      g. Font: Artifakt Element Medium Italic

END OF SECTION 101419

SECTION 102113 – TOILET COMPARTMENTS

1. GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Solid plastic toilet compartments and urinal screens.

B. Related Sections:
   1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. ASTM International (ASTM):
   1. B85 - Standard Specification for Aluminum-Alloy Die Castings.
   2. B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
   3. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

B. National Fire Protection Association (NFPA) 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.

1.3 SYSTEM DESCRIPTION

A. Compartment Configurations:
   1. Toilet Partitions: Floor mounted,
   2. Urinal screens: Wall mounted.

1.4 SUBMITTALS

A. Submittals for Review:
   1. Shop Drawings: Include dimensioned layout, elevations, trim, closures, and accessories.
   2. Product Data: Manufacturer's descriptive data for panels, hardware, and accessories.
   3. Samples: 2 x 3 inch samples showing available colors.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum 5 years experience in manufacture of solid plastic toilet compartments with products in satisfactory use under similar service conditions.

B. Installer Qualifications: Minimum 5 years experience in work of this Section.

1.6 WARRANTIES

A. Provide manufacturer’s 25 year warranty against breakage, corrosion, and delamination under normal conditions.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Contract Documents are based on Hiny Hiders by Scranton Products. (www.scrantonproducts.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Doors, Panels and Pilasters:
   1. High density polyethylene (HDPE), fabricated from extruded polymer resins, forming single thickness panel.
   2. Waterproof and nonabsorbent, with self-lubricating surface, resistant to marks by pens, pencils, markers, and other writing instruments.
   3. 1 inch thick with edges rounded to 1/4 inch radius.
   4. Fire hazard classification: Not required.
   5. Color: Shale.

B. Aluminum Extrusions: ASTM B221, 6463-T5 alloy and temper.

C. Aluminum Die Castings: ASTM B85, A380 alloy.

D. Injection Molded Plastic: High density polyethylene.

E. Rubber: Abrasion resistant Styrene Butadiene Rubber, 65 to 80 Shore A durometer, black.

F. Color: Shale. As selected from Manufacturer's full range of colors.

2.3 HARDWARE

A. Hinges:
   1. Inswing hinges:
      a. Hidden pivot type fabricated from heavy-duty cast aluminum.
      b. Auto-close feature, adjustable to 15 degree open position.
      c. Mounted to doors with stainless steel Torx head screws and through bolted to metal post with tamper proof Torx head sex bolts.
      d. Hinge pivot point: 6 to 8 inches from edge of door; maintain sufficient clearance to water closet.
   2. Outswing hinges:
      a. Fabricated from extruded aluminum.
      b. Auto-close feature, adjustable to 15 degree open position.
      c. Surface mounted to doors with stainless steel Torx head screws and fastened to metal posts with countersunk tamper proof screws.
   3. Provide for field adjustment of plus or minus 0.125 inch laterally and plus or minus 0.125 inch vertically.

B. Door Keeper:
   1. 3.5 inches long, fabricated from heavy duty extruded aluminum, clear anodized finish.
   2. Mount in gap between dividing panel and door.

C. Latch and Housing:
   1. Heavy duty extruded aluminum.
   2. Latch housing: Clear anodized finish.
   3. Slide bolt and button: Black anodized finish.

D. Coat Hook/Bumper: Combination type, chrome plated Zamak.

E. Door Pulls and Push Plates:
   1. Heavy duty extruded aluminum, clear anodized finish.
   2. Single component providing door pull capability on outswing doors.

2.4 COMPONENTS

A. Doors and Dividing Panels:
   1. 55 inches high, mounted 14 inches above finished floor.
   2. Doors: 60 degree angle on two opposite edges for enhanced privacy.
   3. Dividing panels: Slotted on one edge to accept wall bracket.

B. Metal Posts: 82.75 inches high, heavy duty extruded aluminum, clear anodized finish, fastened to foot with stainless steel tamper resistant screw.

C. Hidden Shoe (Foot): One-piece molded polyethylene invisible shoe inserted into metal post and secured to metal post with stainless steel tamper resistant screw.
D. Headrail Cap and Corner Cap: One-piece molded polyethylene secured to metal post with stainless steel tamper resistant screw; adjustable to level headrail to finished floor.
E. Hidden Wall Brackets: 54 inches long, heavy duty extruded aluminum, clear anodized finish, inserted into slotted panel and fastened to panels with stainless steel tamper resistant screws.
F. Headrail: Heavy duty extruded aluminum, designer anti-grip design, clear anodized finish, fastened to headrail bracket with stainless steel tamper resistant screw and to headrail cap or corner cap with stainless steel tamper resistant screw.
G. Headrail Brackets: Heavy duty extruded aluminum, clear anodized finish, secured to wall with stainless steel tamper screws.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install compartments in accordance with manufacturer's instructions and approved Shop Drawings.
B. Install rigid, straight, plumb, and level.
C. Locate bottom edge of doors and panels 14 inches above finished floor.
D. Provide uniform, maximum 3/8 inch vertical clearance at doors.
E. Not Acceptable: Evidence of cutting, drilling, or patching.

3.2 ADJUSTING

A. Adjust doors and latches to operate correctly.

END OF SECTION 102113

SECTION 10 26 13 – CORNER GUARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Corner Guards – Metal

1.3 SUBMITTALS

A. Product Data: Include construction details, material descriptions, impact strength, fire-test-response characteristics, dimensions of individual components and profiles, and finishes for each impact-resistant wall-protection unit.

B. Shop Drawings: For each impact-resistant wall-protection unit showing locations and extent. Include sections, details, and attachments to other work.

C. Qualification Data: For Installer.

D. Maintenance Data: For each impact-resistant wall-protection unit to include in maintenance manuals.

1. Include recommended methods and frequency of maintenance for maintaining optimum condition of plastic covers under anticipated traffic and use conditions. Include precautions against using cleaning materials and methods that may be detrimental to plastic finishes and performance.

E. Warranty: Special warranty specified in this Section.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and approved by manufacturer.

B. Source Limitations: Obtain impact-resistant wall-protection units through one source from a single manufacturer.

C. Product Options: Drawings indicate size, profiles, and dimensional requirements of impact-resistant wall-protection units and are based on the specific system indicated. Refer to Division 01 Section "Product Requirements."

1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

D. Fire-Test-Response Characteristics: Provide impact-resistant, plastic wall-protection units with surface-burning characteristics as determined by testing identical products per ASTM E 84, NFPA 255, or UL 723 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store impact-resistant wall-protection units in original undamaged packages and containers inside well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.

1. Maintain room temperature within storage area at not less than 70 deg F (21 deg C) during the period plastic materials are stored.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install impact-resistant wall-protection units until building is enclosed and weatherproof, wet work is complete and dry, and HVAC system is operating and maintaining temperature at 70 deg F (21 deg C) for not less than 72 hours before beginning installation and for the remainder of the construction period.

B. Field Measurements: Verify actual locations of walls, columns, and other construction contiguous with impact-resistant wall-protection units by field measurements before fabrication and indicate measurements on Shop Drawings.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of impact-resistant wall-protection units that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures.
b. Deterioration of materials beyond normal use.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 MATERIALS

A. Adhesive: Type recommended by manufacturer for use with material being adhered to substrate indicated.

1. Use adhesives and sealants that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

a. Gypsum Board and Panel Adhesives: 50 g/L.
b. Multipurpose Construction Adhesives: 70 g/L.
c. Contact Adhesive: 250 g/L.

2.3 CORNER GUARDS - METAL

A. Surface-Mounted, Metal Corner Guards (CG): Fabricated from one-piece, formed or extruded metal with formed edges; with 90- or 135-degree turn to match wall condition.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. American Floor Products Co., Inc.
b. Arden Architectural Specialties, Inc.
c. Balco, Inc.
d. Construction Specialties, Inc.
e. IPC Door and Wall Protection Systems; Division of InPro Corporation.
f. Korogard Wall Protection Systems; a division of RJF International Corporation.
g. Pawling Corporation.
h. Pre-approved equal.

2. Material: Stainless steel, Type 304.

a. Thickness: Minimum 0.0625 inch (1.6 mm).
b. Finish: Directional satin, No. 4.

3. Wing Size: Nominal 1-1/2 by 1-1/2 inches
4. Corner Radius: 1/8 inch (3 mm).
5. Height: 4 feet tall.
6. Mounting: Adhesive.

2.4 FABRICATION

A. Fabricate impact-resistant wall-protection units to comply with requirements indicated for design, dimensions, and member sizes, including thicknesses of components.

B. Preform curved semirigid, impact-resistant sheet wall covering in factory for radius and sheet thickness as follows:

1. Sheet Thickness of 0.040 Inch (1.0 mm): 24-inch (610-mm) radius.
2. Sheet Thickness of 0.060 Inch (1.5 mm): 36-inch (914-mm) radius.

C. Assemble components in factory to greatest extent possible to minimize field assembly. Disassemble only as necessary for shipping and handling.

D. Fabricate components with tight seams and joints with exposed edges rolled. Provide surfaces free of wrinkles, chips, dents, uneven coloration, and other imperfections. Fabricate members and fittings to produce flush, smooth, and rigid hairline joints.

2.5 METAL FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

1. Remove tool and die marks and stretch lines, or blend into finish.
2. Grind and polish surfaces to produce uniform finish, free of cross scratches.
3. Run grain of directional finishes with long dimension of each piece.
4. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

B. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

C. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and wall areas, with Installer present, for compliance with requirements for installation tolerances, fire rating, and other conditions affecting performance of work.

1. Examine walls to which impact-resistant wall protection will be attached for blocking, grounds, and other solid backing that have been installed in the locations required for secure attachment of support fasteners.
2. For impact-resistant wall-protection units attached with adhesive or foam tape, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Complete finishing operations, including painting, before installing impact-resistant wall-protection system components.

B. Before installation, clean substrate to remove dust, debris, and loose particles.

3.3 INSTALLATION

A. General: Install impact-resistant wall-protection units level, plumb, and true to line without distortions. Do not use materials with chips, cracks, voids, stains, or other defects that might be visible in the finished Work.

3.4 CLEANING

A. Immediately after completion of installation, clean covers and accessories using a standard, ammonia-based, household cleaning agent.

B. Remove excess adhesive using methods and materials recommended in writing by manufacturer.

END OF SECTION 102613

SECTION 10 28 13 - TOILET ACCESSORIES

1. GENERAL
   1.1 Furnish and install all toilet accessories as specified herein.
      a. Pre-Bid Substitutions per 012500

2. TOILET ACCESSORIES SCHEDULE - Refer PLANS.
   2.1 Refer PLANS for manufacturer/model information.
   2.2 General Contractor shall provide pictorial symbol of Men's and Women's Restroom signage, including handicap symbol where necessary, in compliance with ADA requirements.
   2.3 Colors selected by Architect.

3. INSTALLATION
   3.1 Toilet accessories shall be installed in strict accordance with the instructions of the manufacturer.
   3.2 Toilet accessories shall be installed in strict accordance with the ADA requirements (handicap code) in all areas.
   3.3 Items shall be installed plumb, straight and true.
   3.4 Items shall be properly installed and shall be free of surface defects.

END OF SECTION 10 28 13

SECTION 10 44 13 - FIRE PROTECTION CABINETS & EXTINGUISHERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Portable Fire Extinguishers

2. Fire Protection Cabinets

B. Related Sections:

1. Section 092900 “Gypsum Board” for recessed wall cabinets.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for fire protection cabinets.

1. Fire Protection Cabinets: Include roughing-in dimensions, details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type, trim style, and panel style.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

C. Samples for Initial Selection: For each type of fire protection cabinet indicated.

D. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below:

1. Size: 6 by 6 inches (150 by 150 mm) square.

E. Product Schedule: Coordinate final fire protection cabinet schedule with fire extinguisher schedule to ensure proper fit and function.

F. Operations and Maintenance Data: For fire protection cabinets to include in maintenance manuals.

G. Warranty: Sample of special warranty.

1.4 QUALITY ASSURANCE

A. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."

B. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.

1. Provide fire extinguishers approved, listed, and labeled by FMG.

1.5 COORDINATION

A. Coordinate size of fire protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.

B. Coordinate sizes and locations of fire protection cabinets with wall depths.

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fire extinguishers that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Failure of hydrostatic test according to NFPA 10.
b. Faulty operation of valves or release levers.

2. Warranty Period: Six years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B.

B. Tempered Float Glass: ASTM C 1048, Kind FT, Condition A, Type I, Quality q3, 3 mm thick, Class 1 (clear).

2.2 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS

A. Fire Extinguishers: Type, size, and capacity for each fire-protection cabinet and mounting bracket indicated.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Amerex Corporation.
    b. Ansul Incorporated; Tyco International.
    c. Badger Fire Protection; a Kidde company.
    d. Buckeye Fire Equipment Company.
    e. Fire End & Croker Corporation.
    f. Guardian Fire Equipment, Inc.
    g. JL Industries, Inc.; a division of the Activar Construction Products Group.
    h. Kidde Residential and Commercial Division.
    i. Larsens Manufacturing Company.
    j. Moon-American.
    k. Nystrom, Inc.
    l. Pem All Fire Extinguisher Corp.; a division of PEM Systems, Inc.
    m. Potter Roemer LLC.
    n. Pyro-Chem; Tyco Safety Products.
    o. Pre-approved equal.

2. Valves: Manufacturer's standard.
3. Handles and Levers: Manufacturer's standard.
4. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B, and bar coding for documenting fire-extinguisher location, inspections, maintenance, and recharging.

B. Multipurpose Dry-Chemical Type in Steel Container: UL-rated 4-A:60-B:C, 10-lb (4.5-kg) nominal capacity, with monoammonium phosphate-based dry chemical in enameled-steel container.

1. Location: As indicated on the Drawings.

2.3 FIRE PROTECTION CABINET

A. Cabinet Type: Suitable for fire extinguisher.

1. Products: Subject to compliance with requirements, provide one of the following:

    a. Fire End & Croker Corporation.
    b. J. L. Industries, Inc., a division of Activar Construction Products Group.
    c. Kidde Residential and Commercial Division, Subsidiary of Kidde plc.
    d. Larsen's Manufacturing Company.
    e. Modern Metal Products, Division of Technico Inc.
    f. Moon-American.
    g. Potter Roemer LLC.
    h. Watrous Division, American Specialties, Inc.
    i. Pre-approved equal.

B. Cabinet Construction: Provide Nonrated cabinets.

C. Cabinet Material: Steel sheet.

1. Shelf: Same metal and finish as cabinet.

D. Semirecessed Cabinet: Cabinet box partially recessed in walls of sufficient depth to suit style of trim indicated; with one-piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and wall return at outer edge (backbend). Provide where walls are of insufficient depth for recessed cabinets but are of sufficient depth to accommodate semirecessed cabinet installation.

1. Rolled-Edge Trim: 2-1/2-inch (64-mm) backbend depth.

E. Cabinet Trim Material: Steel sheet.

F. Door Material: Steel sheet.

G. Door Style: Vertical duo panel with frame.

H. Door Glazing: Tempered float glass (clear).

I. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.

1. Provide projecting door pull and friction latch.
Provide continuous hinge, of same material and finish as trim, permitting door to open 180 degrees.

J. Accessories:

1. Mounting Bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
2. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated.

a. Identify fire extinguisher in fire protection cabinet with the words "FIRE EXTINGUISHER."

1) Location: Applied to cabinet door.
2) Application Process: Silk-screened.
3) Lettering Color: Red.
4) Orientation: Vertical.

K. Finishes:

1. Manufacturer's standard baked-enamel paint for the following:

a. Exterior of cabinet, door, and trim except for those surfaces indicated to receive another finish.
b. Interior of cabinet and door.

2. Steel: Baked enamel or powder coat.

3. Color: Silver (Match Existing / Field Verify)

2.4 FABRICATION

A. Fire Protection Cabinets: Provide manufacturer's standard box (tub) with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.

1. Weld joints and grind smooth.
2. Provide factory-drilled mounting holes.

B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles selected.

1. Fabricate door frames with tubular stiles and rails and hollow-metal design, minimum 1/2 inch (13 mm) thick.
2. Fabricate door frames of one-piece construction with edges flanged.
3. Miter and weld perimeter door frames.

C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

2.5 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces of fire protection cabinets from damage by applying a strippable, temporary protective covering before shipping.

C. Finish fire protection cabinets after assembly.

D. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.6 STEEL FINISHES

A. Surface Preparation: Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning" or SSPC-SP 8, "Pickling". After cleaning, apply a conversion coating suited to the organic coating to be applied over it.

B. Factory Prime Finish: Apply manufacturer's standard, fast-curing, lead- and chromate-free, universal primer immediately after surface preparation and pretreatment.

C. Baked-Enamel or Powder-Coat Finish: Immediately after cleaning and pretreating, apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat. Comply with coating manufacturer's written instructions for applying and baking to achieve a minimum dry film thickness of 2 mils (0.05 mm).

1. Color and Gloss: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine fire extinguishers for proper charging and tagging.

1. Remove and replace damaged, defective, or undercharged fire extinguishers.

B. Examine walls and partitions for suitable framing depth and blocking where semirecessed cabinets will be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare recesses for semirecessed fire protection cabinets as required by type and size of cabinet and trim style.

3.3 INSTALLATION

A. General: Install fire extinguishers in locations indicated and in compliance with requirements of authorities having jurisdiction.

1. Mounting and installation as per all CODES and ADA requirements.
   a. The maximum reach to the Fire Extinguisher Handle is 48 inches above finish floor.

B. General: Install fire protection cabinets in locations and at mounting heights indicated.

1. Fire Protection Cabinets: 54 inches (1372 mm) above finished floor to top of cabinet.

C. Fire Protection Cabinets: Fasten cabinets to structure, square and plumb.

1. Unless otherwise indicated, provide recessed fire protection cabinets. If wall thickness is not adequate for recessed cabinets, provide semirecessed fire protection cabinets.
2. Provide inside latch and lock for break-glass panels.
3. Fasten mounting brackets to inside surface of fire protection cabinets, square and plumb.

D. Identification: Apply decals at locations indicated.

3.4 ADJUSTING AND CLEANING

A. Remove temporary protective coverings and strippable films, if any, as fire protection cabinets are installed unless otherwise indicated in manufacturer's written installation instructions.

B. Adjust fire protection cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.

C. On completion of fire protection cabinet installation, clean interior and exterior surfaces as recommended by manufacturer.

D. Touch up marred finishes, or replace fire protection cabinets that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by fire protection cabinet and mounting bracket manufacturers.

E. Replace fire protection cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 104413

SECTION 122413 - ROLLER WINDOW SHADES

1. GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Chain-operated roller shades with single rollers. Refer to PLANS for locations

B. Related Requirements:
   1. Section 061053, ROUGH CARPENTRY for wood blocking and grounds for mounting roller shades and accessories.
   2. Refer to electrical for power and connection to controls.
   3. Refer to Finish / Electrical Plans for locations.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.
   1. Include styles, material descriptions, construction details, dimensions of individual components and profiles, features, finishes, and operating instructions for roller shades.

B. Shop Drawings: Show fabrication and installation details for roller shades, including shade-band materials, their orientation to rollers, and any seam and batten locations.
   1. Chain-Operated Shades: Include details of installation.
   2. Motor-Operated Shades: Include details of installation.

C. Samples: For each exposed metal product and for each color and texture specified, 10” long.

D. Samples for Initial Selection: For each type and color of shade-band material.
   1. Include Samples of accessories involving color selection.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.
   1. Minimum of 5 years experience installing the same or similar products.
   2. Manufacturer issued letter dated within the current calendar year, certifying installer has completed training and for the product brand and system bid must accompany all bids. Any bid without this accompanying document will not be accepted.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For roller shades to include in maintenance manuals.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Certified by fabricator of products.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver roller shades in factory packages, marked with manufacturer, product name, and location of installation using same designations indicated on Drawings.

1.8 FIELD CONDITIONS

A. Environmental Limitations: Do not install roller shades until construction and finish work in spaces, including painting, is complete and dry and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Field Measurements: Where roller shades are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operating hardware of operable glazed units through entire operating range. Notify Architect of installation conditions that vary from Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

2. PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design shall be as outlined in PLANS and 090000 “Finishes” (RS-1)

B. Acceptable Manufacturers:
1. LUTRON
2. MECHOSHADE
3. POWERSHADES
4. Or Pre-approved equal per 012500.

C. Source Limitations: Obtain roller shades from single source / single manufacturer.

2.2 CHAIN-OPERATED, SINGLE-ROLLER SHADES

A. Rollers: Corrosion-resistant steel or extruded-aluminum tubes of diameters and wall thicknesses required to accommodate operating mechanisms and weights and widths of shade-bands indicated without deflection. Provide with permanently lubricated drive-end assemblies and idle- end assemblies designed to facilitate removal of shade-bands for service.
1. Roller Drive-End Location: TBD in coordination with Architect.
2. Direction of Shade-band Roll: Regular, from back of roller
3. Shade-band-to-Roller Attachment: Manufacturer’s standard

D. Mounting Hardware: Corrosion resistant brackets compatible with roller assembly, operating mechanism, installation accessories, and mounting location and conditions indicated.

E. Roller-Coupling Assemblies: If required, shall be coordinated with operating mechanism and designed to join up to three inline rollers that are operated by one roller drive-end assembly.

F. Shade-bands:
1. Shade-band Material: Color as per Architect.
2. Shade-band Bottom (Hem) Bar: Steel or extruded aluminum.
a. Type: Exposed 1” metal in a color TBD by the architect.

G. Translucent Fabric for Roller Shade.
1. Source: Draper
2. Type: Blackout
3. Features: Flame retardant. NFPA 701.
4. Orientation: Railroaded with finished fabric surface facing room.
5. Usable Roll Width: 116”

Color: Refer 090000

2.3 ROLLER-SHADE FABRICATION

A. Product Safety Standard: Fabricate roller shades to comply with WCMA A 100.1, including requirements for flexible, chain-loop devices; lead content of components; and warning labels.

B. Unit Sizes: Fabricate units in sizes to fill window and other openings as follows, measured at 74 degrees F.

1. Between (Inside) Jamb Installation: Width equal to jamb-to-jamb dimension of opening in which shade is installed less ¼ inch (6 mm) per side or ½ inch (13-mm) total,

plus or minus 1/8 inch (3.1 mm). Shades may be divided into four (4) equal units on the south and six (6) equal units on the north. Length equal to head-to-sill or -floor dimension of opening in which shade is installed less ¼ inch (6 mm), plus or minus 1/8 inch (3.1 mm).

C. Fabricate shade-bands with battens and seams as required by manufacturer's standards.

3. EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, accurate locations of connections to building electrical system, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 ROLLER-SHADE INSTALLATION

A. Install roller shades level, plumb, and aligned with adjacent units according to manufacturer's written instructions.

1. Opaque Shade-bands: Located so shade-band is not closer than 2 inches (51 mm)] to interior face of glass. Allow clearances for window operation hardware.

3.3 ADJUSTING

A. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

3.4 CLEANING AND PROTECTION

A. Clean roller-shade surfaces after installation, according to manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and installer that ensure the roller shades are without damage or deterioration at time of Substantial Completion.

C. Replace damaged roller shades that cannot be repaired, in a manner approved by Architect, before time of Substantial Completion.

3.5 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain chain-operated roller shades.

END OF SECTION 122413